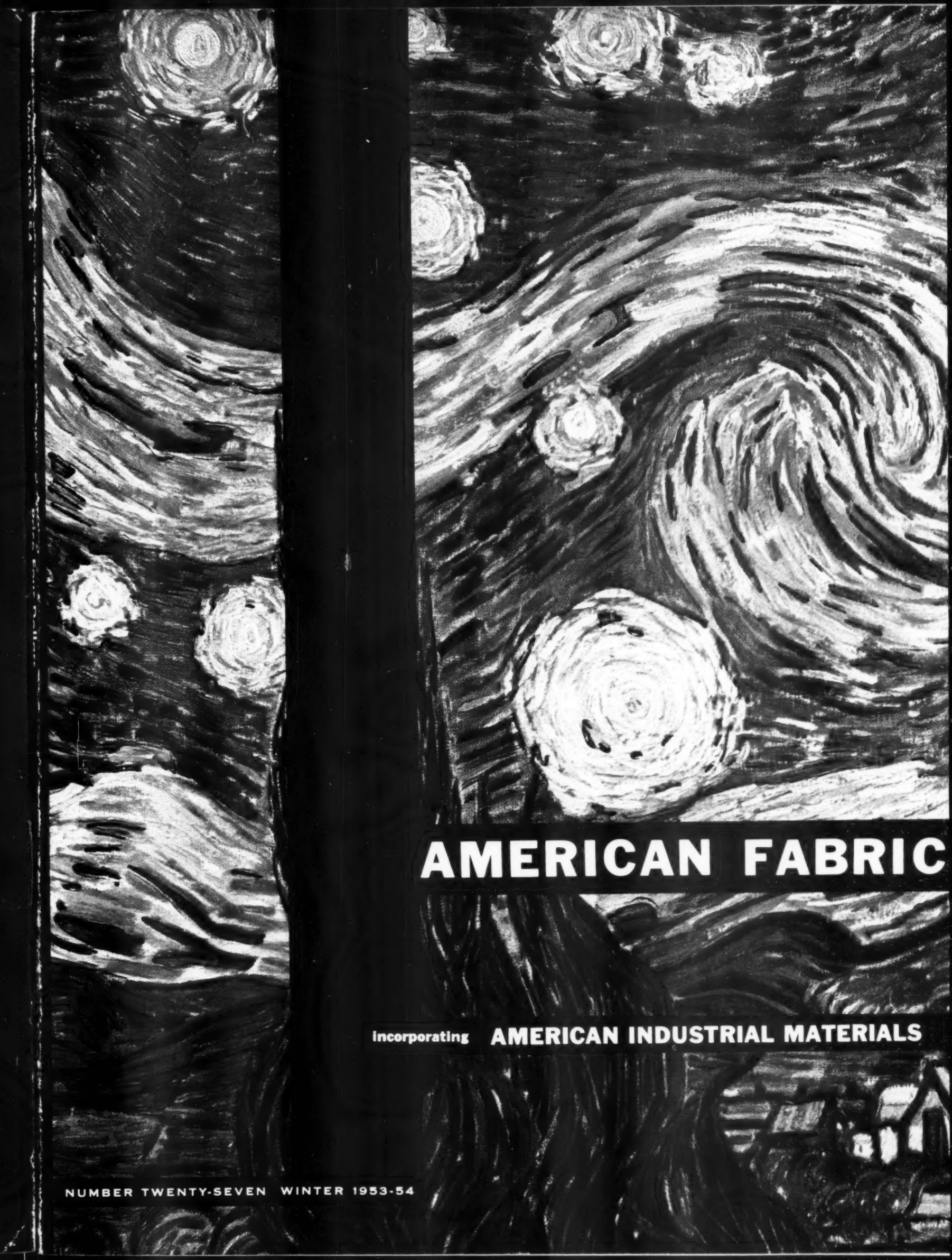

AMERICAN FABRIC

incorporating AMERICAN INDUSTRIAL MATERIALS

NUMBER TWENTY-SEVEN WINTER 1953-54

QUALITY
CRAFTSMANSHIP
STYLE
FORSTMANN
100% VIRGIN WOOL
Look for this label... it identifies
the finest woolens in the world
FORSTMANN WOOLEN COMPANY
PASSAIC, N.J.

American Fabrics

. . . dedicated to the belief that Fashion begins with the Fabric . . . that the American textile industry casts a major influence on the economic and social aspects of the world in which we live and that it has deservedly attained the world's pinnacle from which it can never be dislodged. This volume number twenty-seven of American Fabrics, focussing its editorial spotlight on the current fashion picture in lace and on the newest technical developments in Fiberglas, presents, again, a special section devoted to industrial fabrics and materials.

Board of Editors: Cora Carlyle, Dr. George E. Linton, Howard Ketcham, Alvin Lustig, Estelle K. Silvay, Capt. J. A. Murdocke, R. Bissing. Art Editors: W. Lully, Harry Hering, Albert Greenberg. Staff Photographer: Joshua M. Weiner. Vice-president and Advertising Manager: Joseph C. Stein. Ass't Advertising Manager: Tone Vallee. Business Mgr.: C. I. Rohrlich. Circulation Mgr.: Marc Ross. Ass't to Publisher: Christopher Fremantle. Publisher: Wm. C. Segal.

* * *

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Number 27

Autumn, 1953

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RAYON PRINTS THE NEWS IN CORDUROY
...and prints it with a new softness, a new
sheen that is rayon's special talent...in a Lawrence
of London cardigan coat cut on the straightest
line to fashion. Weather-wonderful, rain or shine
in Glamourella, Crompton-Richmond's
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"Avisco" is the trademark for products
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"first" from the inventive looms
of American Silk Mills

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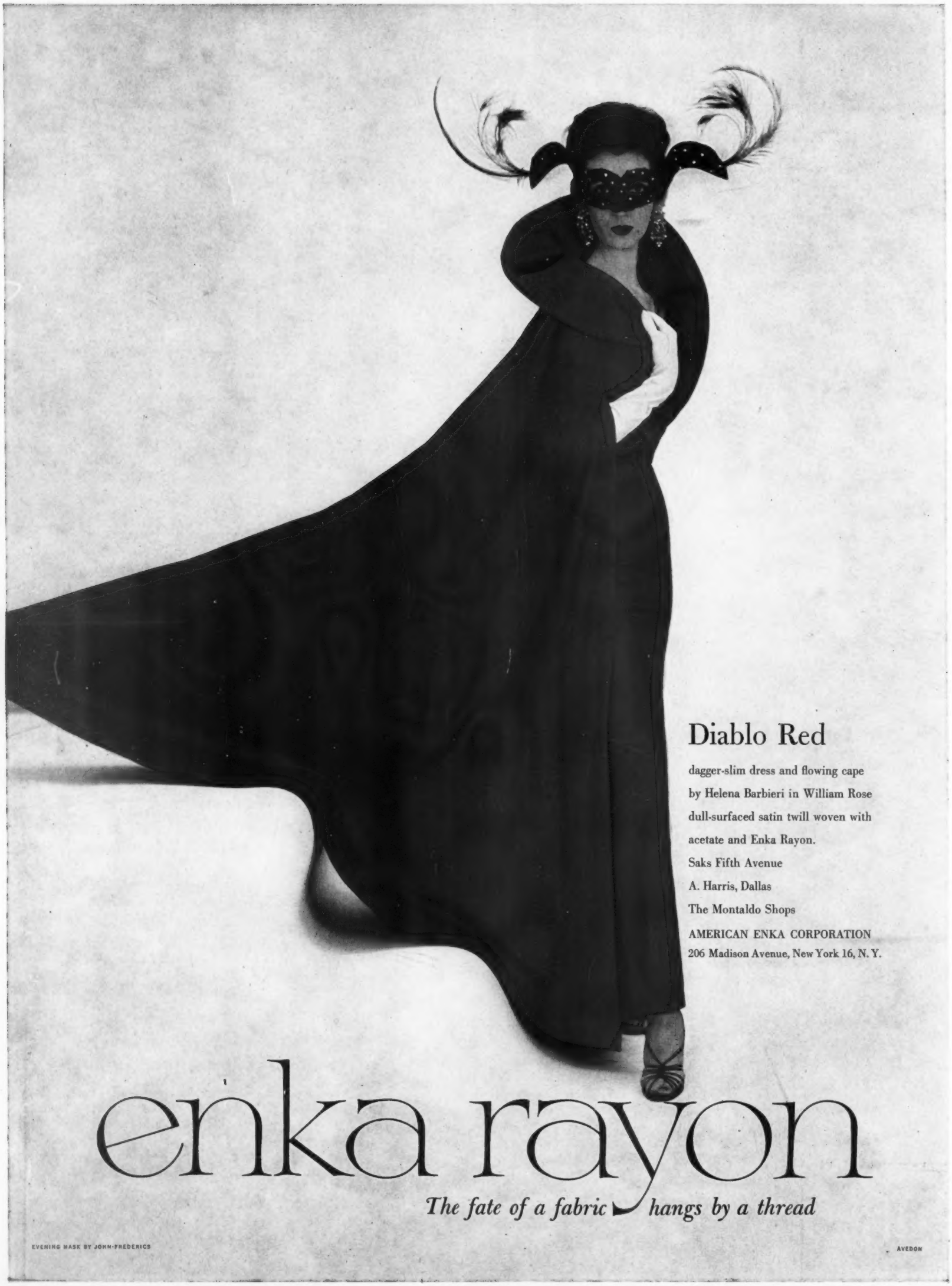
MILLS, INC.

LACKAWANNA 4-2300

Evening sheath in
American Silk Mills'
bouclé lace by Jean Desses . . .
for Deitsch and Conti, Inc.
Photograph courtesy of Du Pont.



Diablo Red

dagger-slim dress and flowing cape
by Helena Barbieri in William Rose
dull-surfaced satin twill woven with
acetate and Enka Rayon.
Saks Fifth Avenue
A. Harris, Dallas
The Montaldo Shops

AMERICAN ENKA CORPORATION
206 Madison Avenue, New York 16, N. Y.

enka rayon

The fate of a fabric hangs by a thread

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AVEDON

who gave these failles and bengalines the finishing touch?

Who supplied the one thing
these fabrics have always needed...
resistance to dry-cleaning shrinkage?

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where pioneering is standard practice,
where filling the needs of the textile
business is *our* business.

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until we could guarantee a finish
that *controlled dry-cleaning shrinkage*
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and made it available through the leading
converters listed below.

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goes on every dress, suit or coat made
from SUPER-CHARACTERIZED fabrics.

Then we obtained the Good Housekeeping
Seal for SUPER-CHARACTERIZED...
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appears on every tag.

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her that top designers and manufacturers
use SUPER-CHARACTERIZED fabrics,
and to look for this tag when she buys.

To sum up: in creating this finish, we
gave manufacturers and retailers a unique
selling advantage...*plus* the means to
promote it. And our advertising to
the trade will keep reminding the retailer
that when smart women buy fashions
of faille or bengaline...they'll insist on
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Shurr Fabrics, Inc.,
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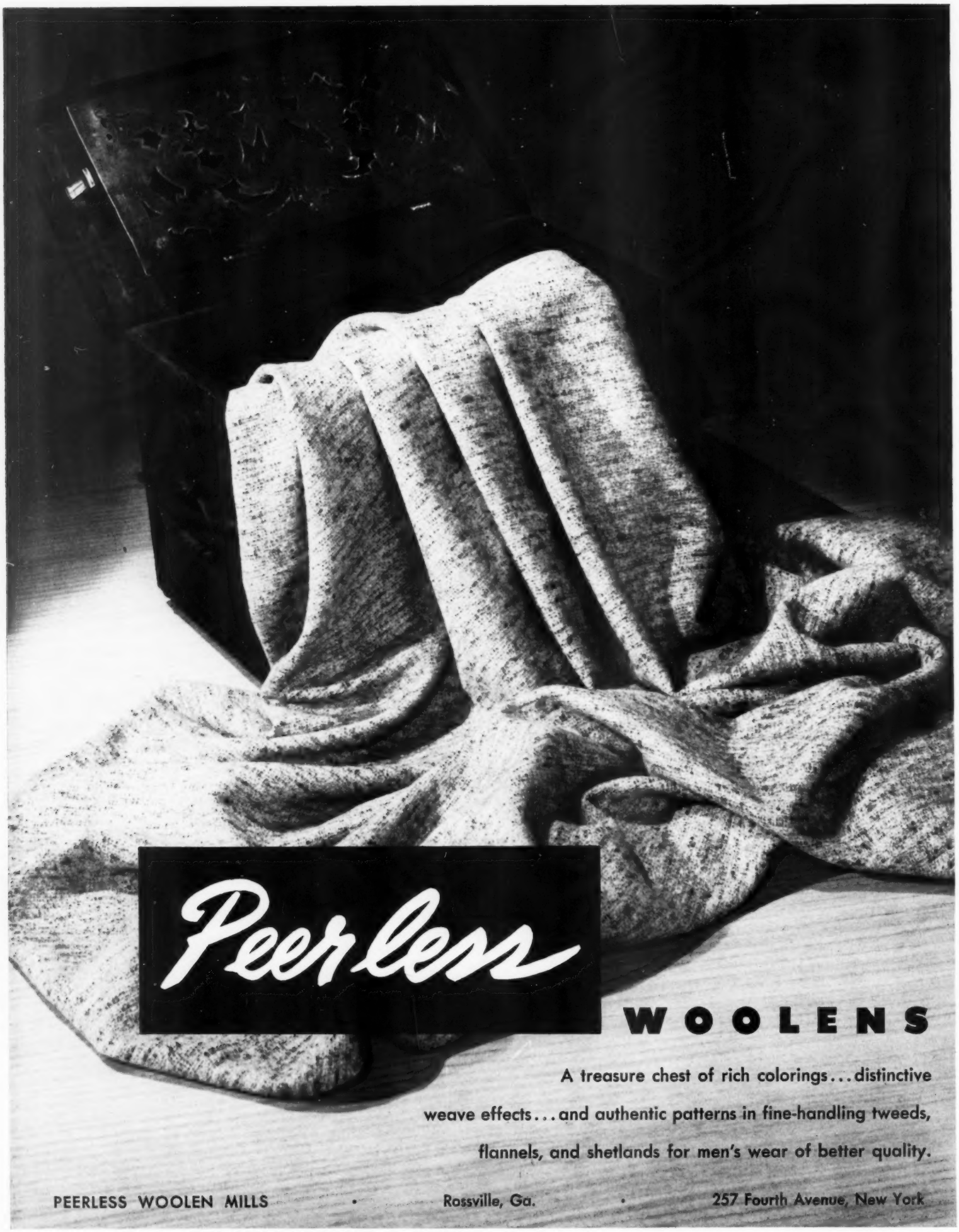
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WOOLENS
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weave effects... and authentic patterns in fine-handling tweeds,
flannels, and shetlands for men's wear of better quality.
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Functional
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Elastic
Lace
Loomed
with

Lastex
Reg. U. S. Pat. Off.

the miracle yarn
that makes things fit

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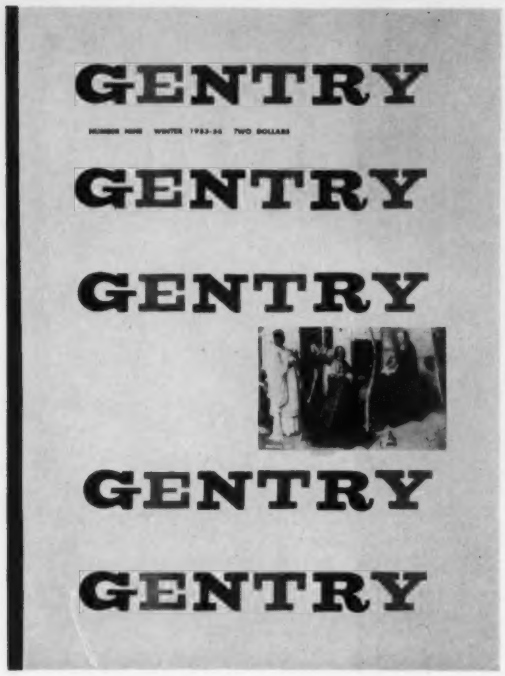


Why don't you give Gentry for Christmas?

GENTRY is a quarterly publication edited for the individual whose mind is ever open to new ideas, new forms; for the individual who respects the best of thinking and art which has endured over the years; who feels that there is much more to living than merely making a living; and who seeks constantly to gain more from his hourly association with people, objects and ideas.

We realize the difficulty of trying to give a picture of GENTRY to those who have not actually seen it. The worth of a magazine depends upon both the ideas within its covers and the form of presentation—and GENTRY's ideas and presentation are not at all ordinary. For example, when GENTRY prints a story on fishing, our technique calls for the tipping on of an actual trout fly in the book. When GENTRY illustrates a new coat, an actual swatch of the fabric is tipped alongside the photo to make it come to life.

Besides good living and fashion, GENTRY believes that people do not live by bread and circuses alone. Art, writing, thinking . . . all geared at the highest possible level, all to give the reader a truly unusual and not-to-be-found-anywhere-else publication . . . this is GENTRY. Eight dollars a year for a quarterly magazine may be a lot of money, but when you think that a single issue of GENTRY contains as many as 20 to 50 individual hand-inserted tip-ons and reference samples, perhaps the price will not seem so high to you. Remember, too, that GENTRY is printed in three processes — letterpress, sheet-fed gravure and offset — in beautiful colors on fine papers, is bound in semi-stiff covers, and is finally delivered to you in a heavy cardboard cover to insure its perfect condition.

GENTRY, despite its high price, is not a magazine for the wealthy alone; it is, rather, for those rich in mind, and such of your friends as can make full use of GENTRY's stimulating and inspirational content will consider it a superb gift.

GENTRY is sold almost entirely by subscription and is not easily available on newsstands. A GENTRY subscription makes an unusual gift that will bring a year's pleasure and delight to people who are near and dear to you, and to business associates or clients who will value a gift of distinction. In handling each gift subscription, GENTRY takes handsome care of all details and gift cards. For your own subscription or for gifts for your friends, please write to

REPORTER PUBLICATIONS
Empire State Bldg.
New York, N. Y.

Yes, Gentry is published by the publishers of American Fabrics.

A window...a fabric...a home

For those windows in *your* home, wonderful new Fiberglas fabrics that have everything you've been looking for. They're soft and luxurious—drape like a dream—and what's more, they don't need lining to bolster them up. And the colors are beautiful—extra fast to sunlight, too! The charming hand-prints shown above are "Place de Rennes" on the left, and "Flowering Quince" on the right. In the center, a lovely sheer boucle in gold. See these and other beautiful Fiberglas Drapery Fabrics at leading decorator and department store shops. Let our Consumer Service tell you all you want to know about Fiberglas fabrics. Just write Fiberglas Consumer Service, 16 East 56th Street, New York 22, New York.

HAND-PRINTS BY Greeff

FABRICS WOVEN OF OWENS-CORNING FIBERGLAS

YARNS

CREATIVE...

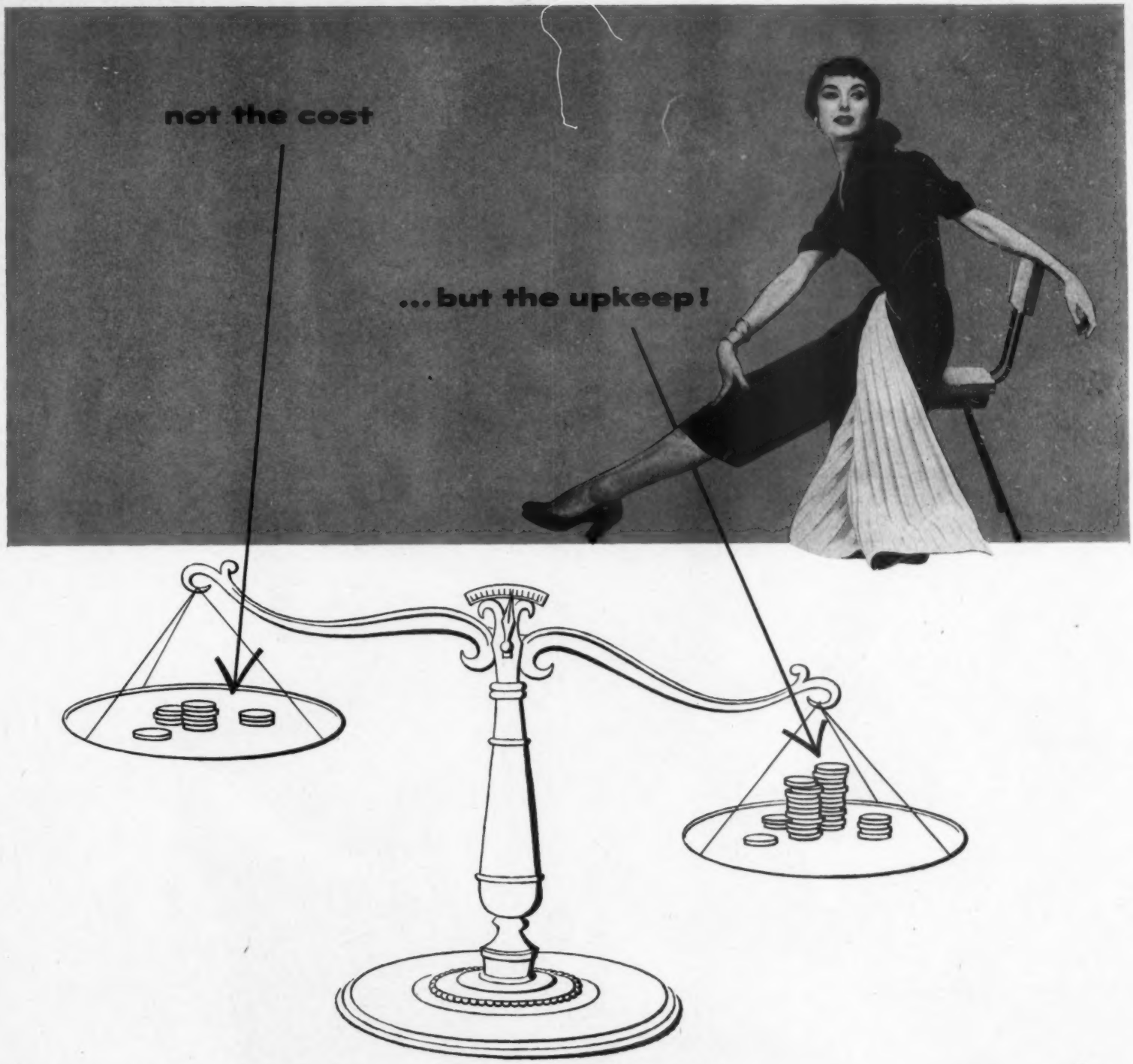
ELEGANT...

TRADITIONAL...

LACES BY

Liberty Fabrics

OF NEW YORK, INC.,
244 Madison Avenue, New York City



This old complaint is fast becoming a thing of the past. Now, fashions made with Du Pont's modern-living fibers offer beauty *plus* practicality. Now, customers may have smart styles that stay fresh-looking, wear longer and require *less upkeep* . . . in time, money and effort.

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NYLON) RAYON) ACETATE) ORLON® ACRYLIC FIBER) DACRON® POLYESTER FIBER)

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the great state of
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whereas
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whereas
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whereas
these PRINCETON fabrics have been machine-tested time after time after time and have proved beyond any doubt to add great sales-appealing practicality to the most beautiful styles of the day...

the new state of machine washability
is hereby established and ratified by these leading apparel makers...

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"before
and after"
tests prove
that
PRINCETON'S
ORLON* KNIT
fabrics
can be
BENDIX-WASHED
...and worn
like new
again!

FOR BEST RESULTS
WASH AND DRY IN
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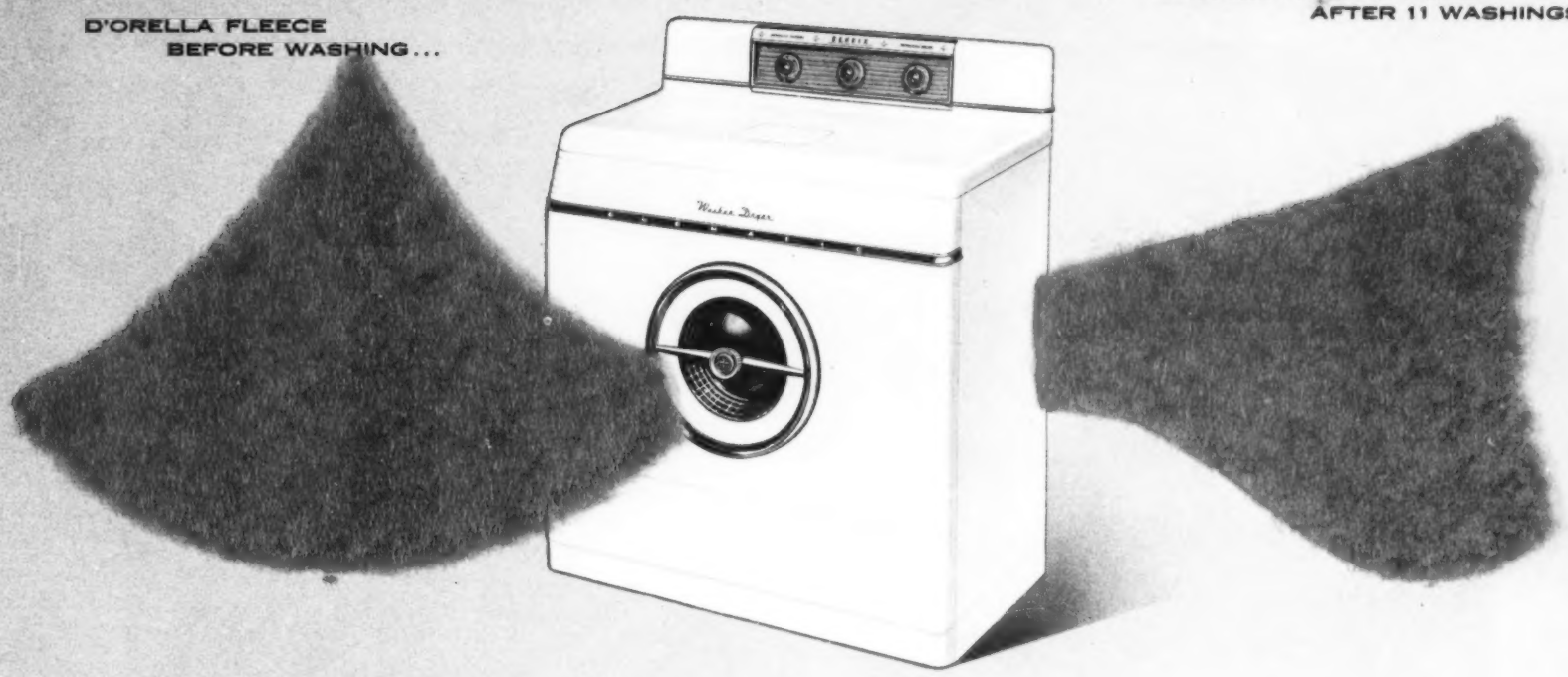
tumble-action
WASHER
•
BENDIX
fluff 'n tumble
DRYER

HALLDON LTD.

Sandra
OF CALIFORNIA

D'ORELLA FLEECE
BEFORE WASHING...

...THE SAME FABRIC, D'ORELLA,
AFTER 11 WASHINGS!



It's fantastic—but true!
Your customers can toss their garments into a BENDIX—to be washed and dried in less than an hour!
Washing after washing—yet no loss of sprightly line, lively color or soft texture!
Flares stay . . . folds stay . . . pleats stay . . . shirrings stay!
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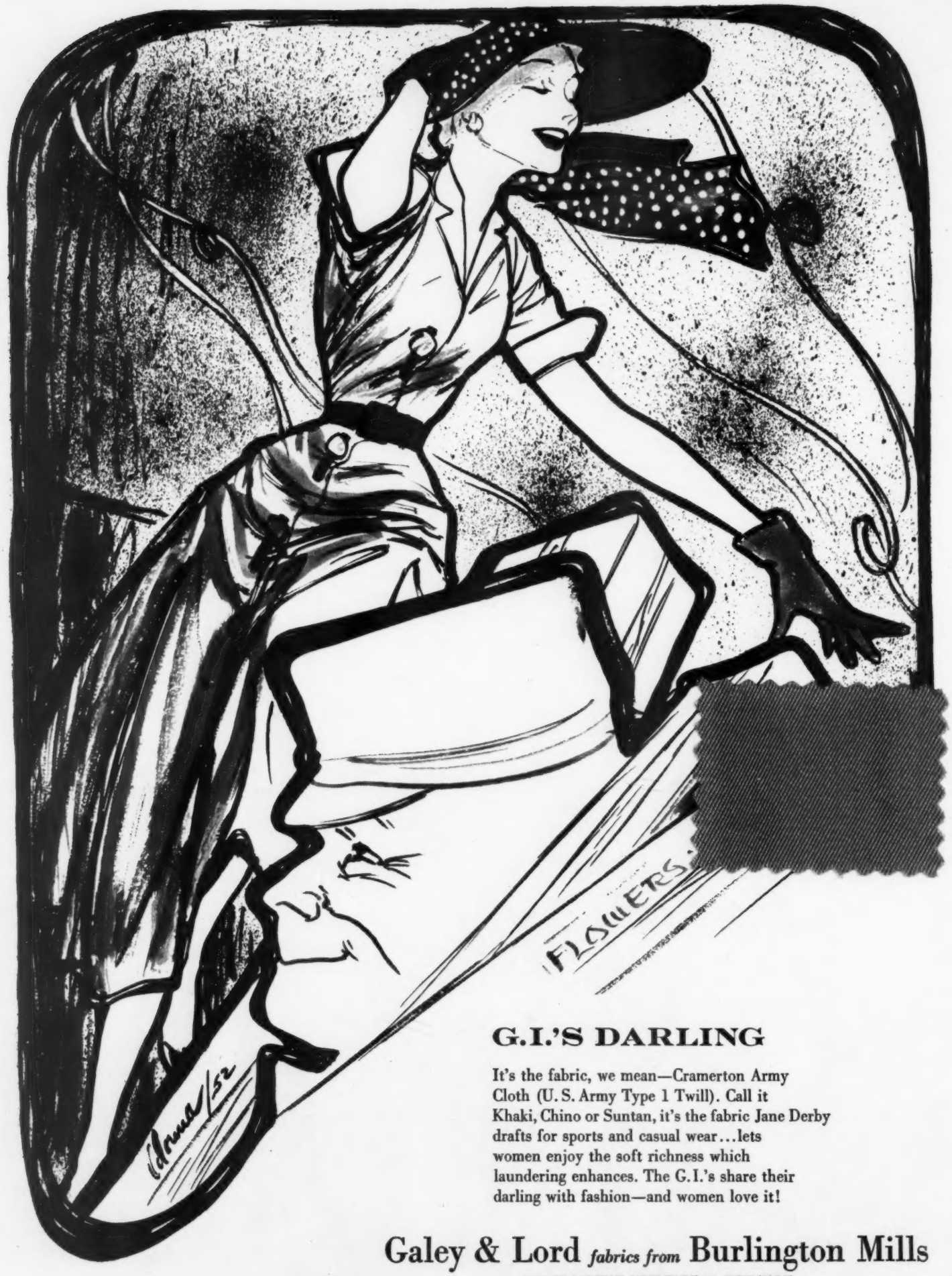
BENDIX HOME APPLIANCES
DIVISION, **AVCO** MANUFACTURING CORP., 1329 ARLINGTON, CINCINNATI, OHIO



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It's the fabric, we mean—Cramerton Army Cloth (U. S. Army Type 1 Twill). Call it Khaki, Chino or Suntan, it's the fabric Jane Derby drafts for sports and casual wear...lets women enjoy the soft richness which laundering enhances. The G.I.'s share their darling with fashion—and women love it!

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Bringing you an entirely new concept of core-yarn construction and fabrics color-coordinated and styled by Mary Shannon, Inc.

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NySpun fabric construction eliminates the weaknesses of blends. They are loomed of spun-engineered yarns with nylon filament cores completely covered with fine wool. As a result, NySpun fabrics have all the fine handle and features of wool-worsteds plus washability and exceptional two-way strength in all weights.
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*The NYSPUN name and NYSPUN YARNS are fully protected by United States Patent Number 2,526,523

Holly Mills, Inc. owns and controls the manufacture of all NYSPUN YARNS and all fabrics made of NYSPUN

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MOVÉ	4 oz.	90%	10%
PERMELLA	7 oz.	83%	17%
TERRANA	8 oz.	90%	10%
VELANA	9 oz.	88%	12%
SUALON	9½ oz.	83%	17%
MORLANA	11½ oz.	83%	17%

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Sales Office: Suite 936, 200 Fifth Ave., New York 10

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ARE THE
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OBTAINABLE TOO
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ARE SOLD.
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feels like Wool...

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The first with
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The first with
the Sanforlan license.

and now...

REPLACEMENT OR A REFUND OF MONEY
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This woolen fabric is really machine washable. It bears the "Sanforlan" trademark, which means that it can be washed repeatedly without loss of original fit. It is available in garments made by leading manufacturers in all fields. The fabric was constructed for active wear combining 85% wool with 15% nylon making the cloth wool warm, nylon strong and kind to the tenderest skin.

sportswear by Susan Thomas

*The girls are not necessarily guaranteed by Good Housekeeping, but the fabric is.

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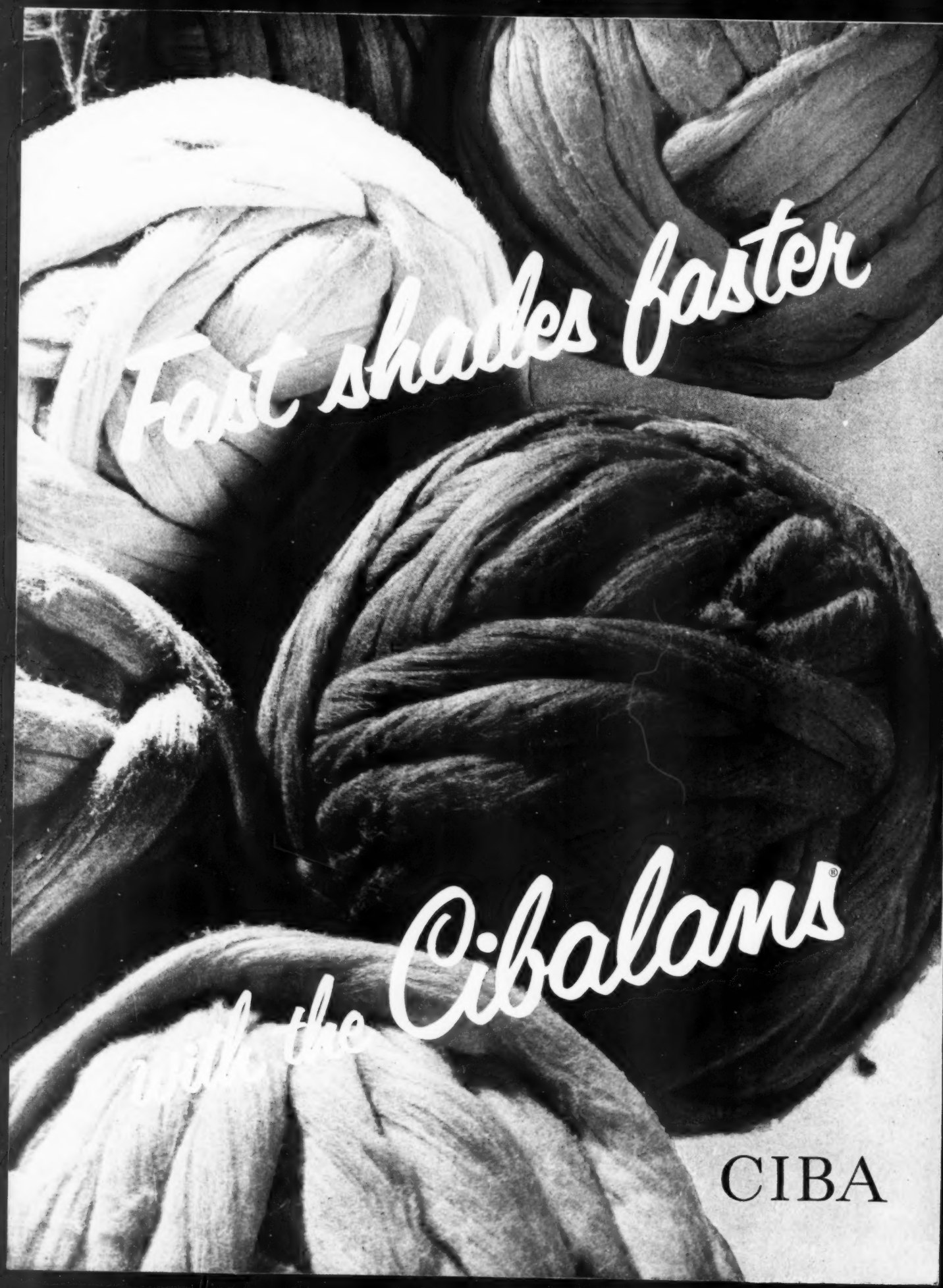
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with the Cibalans®
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. . . For the largest selection in
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EMBROIDERIES keep your eye on
Max Mandel Laces, Inc. —
leader for over 60 years . . .

* Lace flounced bathtubs, the "newest thing" during the reign of Louis XIV, were an accepted place to receive callers.

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The soft luxury of *Vicara*®

ZEIN FIBER

in men's wear...

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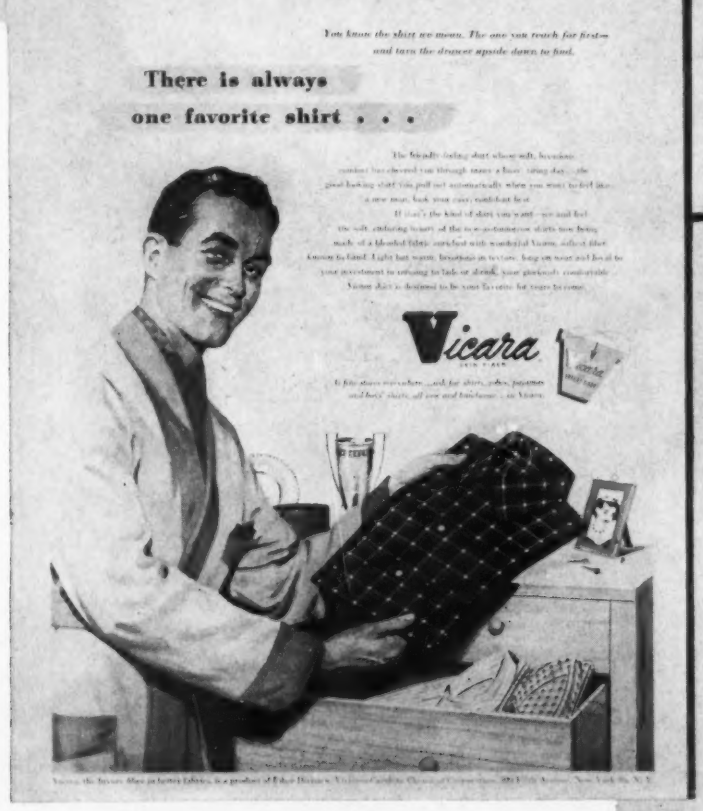
Don't Forget Comfort?

Four-color page, THE SATURDAY EVENING POST, October 3, 1953


You know the shirt we mean. The one you reach for first—and turn the drawer upside down to find.
There is always one favorite shirt . . .
Vicara

Four-color page, THE SATURDAY EVENING POST, October 17, 1953

Quick wrinkle recovery...shape retention ...washing-without-shrinking...long wear...are important advantages in men's wear. *Vicara* has them all. But nothing takes the place of comfort... the soft, luxurious comfort that *Vicara*, softest fiber known to hand, brings to the blend. The fact is, men don't have to be sold on comfort... it's what they've always wanted. May we have the early opportunity of telling you about the many *Vicara* Success Stories—men's wear, women's wear and home furnishings—we have in our files?

For a Vicara men's wear resource list, full-color reprints of the above advertisements, sales and merchandising aids and other information—write to the address below.

Vicara, the luxury fiber, is a product of
Fiber Division, Virginia-Carolina Chemical Corporation,
500 Fifth Ave., New York 36, N. Y.

Vicara

Designed for You . . . Gehring helps you create the newest fashions in lovely lingerie by giving you masterpiece designs in luxurious nylon lace. Dress designers will find the same creative craftsmanship and quality in our all-over laces for the dress industry.

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NYLON *Gehring* Laces

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This is Beau-Suede *a Beaunit Seal of Merit fabric of exceptional fashion interest. It is woven of fine combed cotton, has a lustrous suede surface of unique character and comes in a range of sparkling brilliant colors. Though luxurious in look and feel,* Beau-Suede *welcomes hand washing.*

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Distinctive as a thumb Print

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To prove it we have 48 years Tradition for fine printing of

Lawns, Organdies, Dimities, Voiles, Broadcloths, etc.

BELLMAN BROOK
BLEACHERY CO.
(8 Miles from New York's Textile Center)
Fairview, N. J.

Finishers of Organdies, Lawns, Dimities, Voiles, Piques and other Sheer Cottons.
BELLMANIZED STARCHLESS FINISH
Licensees for Sanforized, Tebilized (for tested crease resistance) and "Heberlein" Processes.

That's the shortest route from the world's greatest textile market to a world of fine finishing. May it be said to the lasting credit of Dan Kelly—he was no Marco Polo but his exploits served to commemorate a route becoming ever more famous for the fine textiles that find their way to the markets of the world from a finishing plant located at the base of this thoroughfare, since 1905.

Golden Jubilee - 50 years of Fabric achievement

Think of 100% Nylon Chantilly Lace . . . and you naturally think of NATIVE. Lingerie manufacturers have, for 50 years, been thinking of—and coming to—NATIVE for their laces, nets, embroideries, power nets and tricots. They know that the styling, construction and service they get from NATIVE has no peer. They have made NATIVE the leading lace supplier for lingerie in the country.

Native

NATIVE LACES & TEXTILES, INC., 261 Fifth Avenue, New York 16, N. Y. MUrray Hill 6-0400

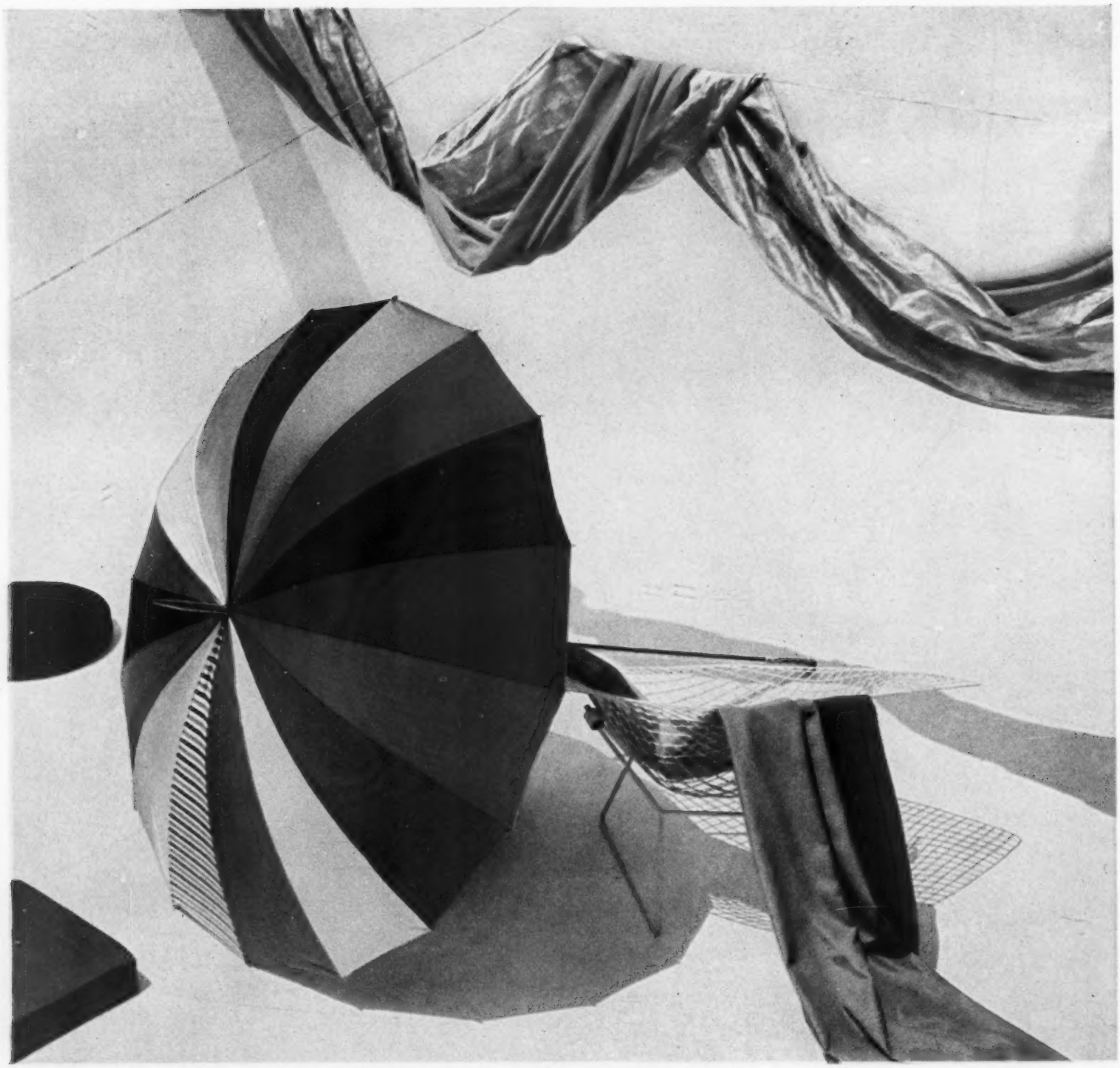
THE COLOR STORY OF THE YEAR . . .

in both fashions
and fabrics for the home

Celanese*

CELAPERM*

the acetate yarn with "sealed in" color



*Reg. U.S. Pat. Off.

CELANESE CORPORATION OF AMERICA, NEW YORK 16, N. Y.

FINISH HAS BECOME A FETISH

IT'S IN THE AIR, it's in the ads. Everywhere — but everywhere — they are talking about finishes; in the showrooms, in the buying offices, in the stores, in the homes. This certainly seems to be the latest twist in the textile trend.

Buyers in all categories are becoming more and more concerned with the things that happen to a fabric after it is "made" — after it is spun, dyed and woven; or spun, woven and printed. In other words, the finish.

It would be a decided mistake, however, to think of the finish of a fabric as the frosting on the cake. Something far more than mere calendering and final "prettying up" is meant by a modern finish. Today the ultimate processing of a piece of cloth frequently alters its structure and character, just as it is certainly altering the course of the textile business.

When modern textile users talk about finish they have two different types in mind. The first is the kind you can see and feel. It possesses conspicuous qualities imparted by embossing, puckering, glazing, sueding, sculpturing, or otherwise texture-izing.

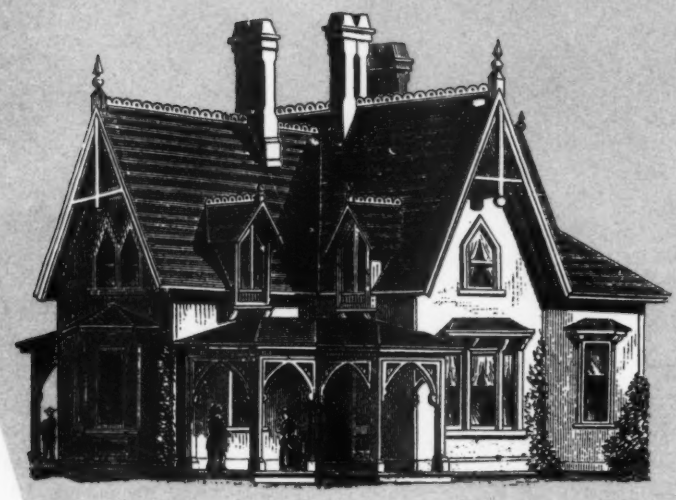
In addition to this great group of finishes whose importance is primarily a matter of eye-appeal or hand-appeal, there is an equally important group whose purpose in the life of a fabric is functional rather than decorative. In this category, you must list the various wrinkle-resistant and crush-resistant processes; the finishes which fortify fabrics and those which make them keep their crease and crispness; the water-repellent and stain-repellent group; the stabilized stitch treatment for tricot.

Of course, in many cases one single finish will confer several different and important qualities. For example, wrinkle-resistance and soil-resistance are commonly traced back to the same synthetic resin treatment. Some of these finishes are hailed as specific panaceas for practically every fabric ailment you can name.

But it isn't technicalities that the textile buyers want, it's results. Above all, they want the selling advantage of being able to promote the fabrics that people have heard about and read about in the ads: the fabrics which are permanently processed to ward off wrinkles, limpness, spots and what have you.

Without disparaging the others, the greatest of these is the anti-wrinkle process. In spite of the fact that there are literally hundreds of different finishes with hundreds of different names (including also the same finishes under a variety of different private trademarks), the consumers have managed to fasten on to one particular finish more than any other — and that is, wrinkle-resistant finish.

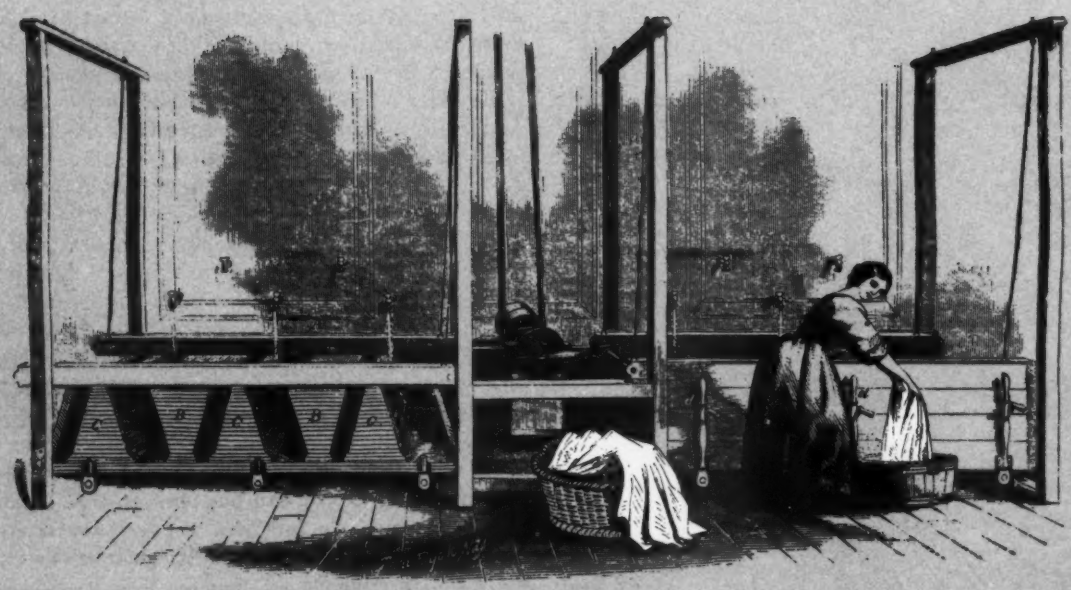
The word is definitely spreading throughout the length and breadth of the land that excessive wrinkles need no longer be tolerated. Just as you can buy showerproof raincoats and mothproof woolens, you can now buy wrinkle-resistant cottons and rayons. And that is precisely why finish has become a fetish with the trade throughout the land.



WE TOLD YOU SO
FOUR YEARS AGO

A Changing World

and its Impact on the American Fabric and Fashion Industries



In 1859 this drawing of a new washing machine appeared in the SCIENTIFIC AMERICAN. *Less than a century later the modern home washing unit was exerting a major influence on contemporary fabrics and fashions.*

WASH DAY WAS NEVER LIKE THIS

AS PROPHESIED, the machine age has now become the washing machine age. To prove it, some of the mills who believe that the future will soon be here to stay are issuing garment tags that read not *washable*, but *machine washable*.

The changing world in which we live will not be denied. Be it noted for the record that there are no washtubs in ranch houses. A brand new design for living governs this servantless era of ours. There is no time in the schedule of the modern housewife for the old-fashioned family wash. There is no place in the modern philosophy of life for back-breaking drudgery.

What woman wants to be a slave to a washboard any more than she wants to get *dishpan hands* and waste precious hours over a kitchen sink? None of these evils are necessary any more, thanks to the dishwasher, the washing machine and the other appliances of today's mechanized kitchen.

Even so, the textile industry is just catching up with these particular changes in the American way of living. Fabrics labeled *machine washable* are only now coming into prominence.

Though a new thought market-wise, it is an old story in AMERICAN FABRICS. Back in issue No. 16 you read, "One of the interrelated situations which culminated in the vast expansion of washable fabrics was the economic condition which produced the home laundry machine. Did the washing machine create the opportunity for washable fabrics . . . was it the widespread use of washable fabrics that made it practical to produce washing machines . . . or did the diminishing supply of the household labor market open up both fields?

"Who at the turn of the century could foresee the development of the home laundering machine to the point where it is almost as common today as the cooking stove? But beyond this point, who could foresee the effect this ingenious piece of machinery would have on the basic thinking and technology of the entire textile industry?"

How Washable was Washable?

While the washing machine was being developed, the American consuming public was becoming increasingly conscious of the fact that the word *washable* could cover every reasonable practical laundry requirement — or, conversely, a multitude of sins. This situation was drawn into sharp focus when the first man-made fabrics came on the market. There was a lot of hedging in the matter of washability. Garments purchased as washable turned out to be so only at very low temperatures and with very special and elaborate handling.

In other words, how washable was washable? If the merchandise was labeled *hand washable*, was it really *mollycoddle washable*, and would it be ruined if the washer did not observe all kinds of complicated precautions? This sort of thing is tolerable in the case of something very precious, but it certainly is not the normal procedure of the washing machine age.

Complete Washability now a Fact

The circumstance that has brought the situation to a boil rather rapidly is the advent of the so-called miracle fibers. Sooner or later people were bound to get the idea that it wouldn't be much of a miracle if garments made of the new *wonder fabrics* couldn't be tossed into a washing machine.

But it took a lot of doing: endless experimental work and development work — by weavers, by knitters, by finishing plants, by washing machine manufacturers. Anyone who has had the slightest experience with the new fibers will have no difficulty in imagining the magnitude of the job.

Even now that machine-washability is an accomplished fact it is anything but a cut and dried matter. As one writer put it: "Washing gets more like cooking all the time! Manufacturers of automatic washers are developing new washing recipes. These laundry recipes give time and temperature settings that resemble cooking instructions." Commenting on the increasingly important role played by Dacron, Orlon, nylon, Acrilan, dynel, et al in the family laundry, the article pointed out that fabrics made from man-made miracle fibers have usually been labeled *hand washable*. However, many such garments can be washed automatically in a tumble-action washer following this simple washing recipe:

> *Place garments in washer. Set temperature control for warm. Set water rationer according to size of load. Set time control for four-minute wash. Add four tablespoons non-precipitating water softener, plus two tablespoons mild soap flakes or powder. Increase the amounts of soap and softener by half for large loads or heavily soiled clothes. Brush heavily soiled collars and cuffs with soap solution before placing in washer.*

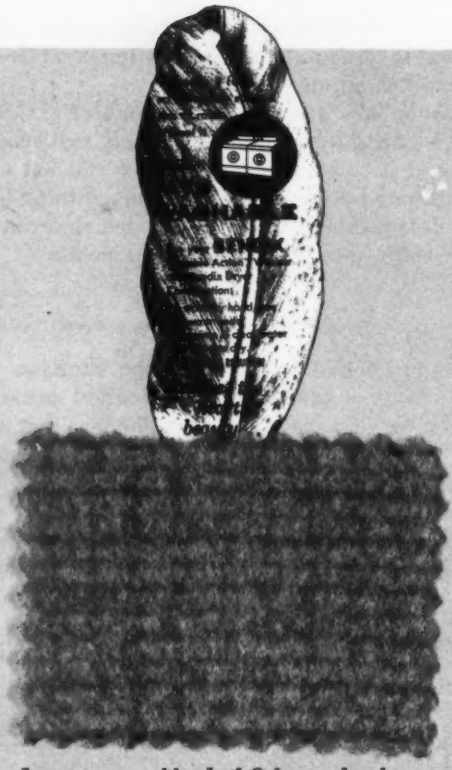
This was written just one year ago. A lot of progress has been made since that time, especially in getting away from the use of threads, trimmings, linings and stiffenings with performance-characteristics widely at variance with the body fabric of the garment. Today the consumer can choose from a gratifying variety of smart fashions made of *wonder fabrics* that do not require special washing recipes at all but are completely machine-washable without any reservations or special instructions. It is one of the most clear-cut trends in textiles today.

* * *

In case there are any doubts on the subject, a very simple question will serve to clarify them all. Suppose you were out shopping and you saw two garments on a counter. Now suppose one of them was labeled *washable* and the other labeled *machine-washable*, which would you buy?

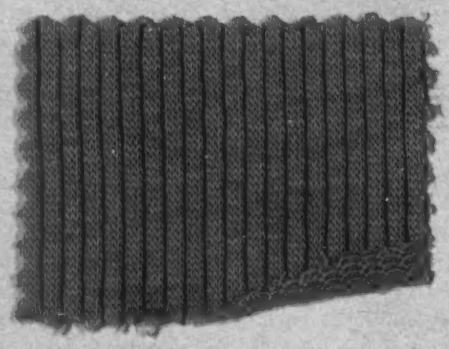
There is one further thought. The demand for machine-washable merchandise will never grow less. It can only grow greater.

(please turn the page)

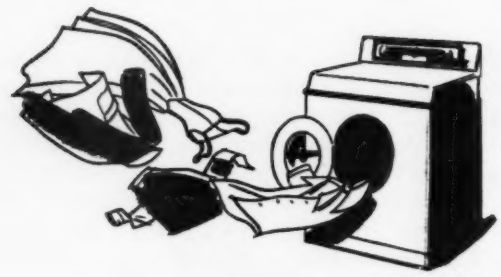


LORONYL — a blend of Orlon and nylon

two fabrics from
PRINCETON KNITTING MILLS
which are completely machine-washable



DORELLE — a blend of Orlon and wool



WASH DAY WAS NEVER LIKE THIS

Case History

THE MOST INTERESTING and stimulating development to date in the washing of modern *wonder fabrics* by automatic home laundry equipment is a three-way project. It involves Princeton Knitting Mills, Bendix Home Appliance Division of Avco Manufacturing Corp., and a number of leading manufacturers of ready-to-wear.

The featured fabrics are made of Orlon or Orlon blends. They have been fashioned into coats, dresses, robes and children's clothing, each one of which is tagged *Bendix machine washable*, or words to that effect.

Included in the collection are a daytime dress by Nelly de Grab, a swim suit by Caroline Schnurer, a sheath dress by Denby Fashions, a full length coat by Sandra of California, separates by D'Orelle, and others. It's an impressive wardrobe and it involves some impressive names, but above all it involves machine washability — machine washability without any reservations whatsoever for every fabric and every fashion in this pioneer group.

Nor are piece goods neglected in this program. Hanora has these Bendix-washable fabrics knitted by Princeton ready for home sewers who see no reason why the benefits of machine washable *wonder fabrics* should not be extended to cover their own creations.

To activate this program, the Bendix people have practically gone into the textile business. They have set up laboratories for testing new fabrics and the finished garments utilizing these fabrics. They have developed washability standards and have issued a seal of approval for hang tags on garments that meet specifications. It has also been necessary to include a special service to handle requests for launderability information from both consumers and companies in the textile and apparel industries, as well as in related fields.

There is no question of the fact that this three-way project of Princeton, Bendix and cooperating cutters is a long and significant step in the right direction.

5

TINA LESER
and the
BLACK WATCH

The Black Watch Tartan, never-ending in popularity, is currently styled in sportswear by Tina Leser, one of America's foremost designers. Carleton Woolen Mills interprets this good clan design in fine wool blended with nylon. *See swatch.*

MODERN FIBERS

RAYON . . . *The fiber that welcomes color.*

Rayon dyes beautifully to delicate, clear pastels or to vibrant, deeper tones. Can be fabricated into garments that have the appearance of silk or wool.

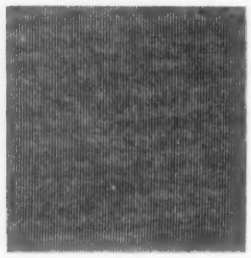
Rayon gabardine

RAYON washes easily; dries more slowly than other man-made fibers. Absorbs moisture; is comfortable to wear.
Texture is soft; feels smooth next to skin.
Resists moths; needs no special care to protect it against moth damage. Irons easily; use *rayon* setting.

' ' '

Tends to wrinkle, but can be treated with a finish to resist wrinkling; for this check the label. Tends to stretch.
Tends to sag in dampness.
Is subject to shrinkage unless stabilized.

ACETATE . . . *The fiber that lends drape to a fabric.*



Acetate fabrics need never be coaxed into a drape; they fall naturally into soft, graceful lines. Acetate gives luxurious brilliance to fabrics; used with other fibers it gives fine cross-dye possibilities.

Acetate taffeta

ACETATE washes easily; dries faster than rayon, but slower than other man-made fibers.
Texture is soft; feels silky next to skin.
Is resistant to insects and mildew.

' ' '

Is sensitive to high heat; should be ironed with warm, never hot, iron.
Loses some strength when wet, though not so much as rayon.
Dissolves in nail polish or remover.

NYLON . . . *The tough fiber.*

Nylon is built to take everyday wear and tear. Like steel wire, it combines strength with light weight. Can be made into textiles with either silk- or wool-like appearance.

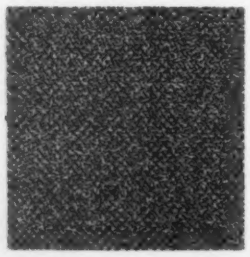
All-nylon printed sheer

NYLON washes easily; dries quickly; needs little ironing.
Holds shape; does not shrink or stretch.
Takes pleats and creases, and these can be heat-set into fabric durably. Resistant to insects and mildew.
Has excellent wet strength — important in swim wear.

' ' '

May be damaged by long exposure to sunlight.
Is sensitive to high heat; if ironing is required, press with *rayon* setting or fabric will fuse.
Has low moisture absorption.

DACRON*. . . *The fiber that gives a fresh-as-a-daisy look to fabrics.*



Shrugs off wrinkles and creases, even when wet. In blends, makes good suitings with excellent wrinkle-resistance and pleat-retention.

All-Dacron suiting

DACRON washes easily; dries quickly; needs little ironing. Holds shape; does not shrink or stretch.
Takes pleats and creases, and these can be heat-set into fabric durably. Is resistant to insects and mildew.
Allows quick, easy removal of water-borne spots, such as tea, coffee, or lemonade.

' ' '

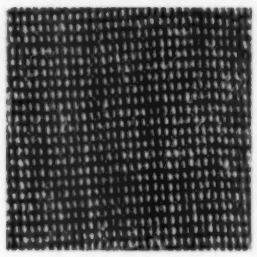
Is sensitive to high heat; if ironing is required, press with *rayon* setting so that shape is not distorted.
Has low moisture absorption.

*Du Pont's polyester fiber

AN EDUCATIONAL

and their PROPERTIES

ORLON*. . . *The fiber with a pleasing hand.*



Fabrics made of Orlon keep their strength and lasting good looks even after long exposure to sunlight, soot, smoke, and acid fumes. Orlon is warm and dry to the touch, giving a dry hand.

Orlon-rayon tweed

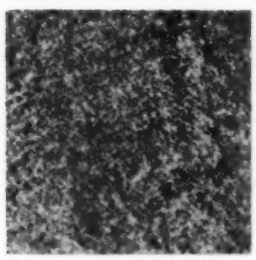
**Du Pont's acrylic fiber*

ORLON washes easily; dries quickly. Needs little ironing.
Texture is soft; feels warm next to skin.
Drapes well; falls easily into soft folds.
Is strong; gives hard wear with light weight.
Takes pleats and creases, and these can be heat-set into fabric durably. Is resistant to insects and mildew.
Resists weakening by sunlight.

' ' '

Is sensitive to high heat; press with *rayon* setting.
Has low moisture absorption.

DYNEL . . . *The fiber that gives fabrics warm, comfortable, and long wearing qualities.*



Has a pleasing, wool-like touch. Blends well with cotton, rayon, and wool. Excellent alone for industrial uses. Resists chemicals — is nonflammable in nature.

Dynel-rayon napped fabric

DYNEL washes easily; dries rapidly.
Pleats and creases set into fabric are durable.
Is resistant to insects and mildew.

' ' '

Dynel does not come in pure white.
Is heat-sensitive and requires special precautions in ironing or pressing.
Has low moisture absorption.
May shed some fibers in napped fabrics, like blankets.

VICARA . . . *The fiber that gives fabrics unmatched softness.*

Has the soft, fine feel of cashmere. Mixes well with other fibers and is usually found in blends, in which it excels.

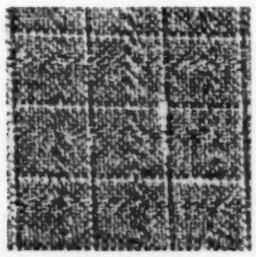
Vicara-worsted suiting

VICARA washes easily; dries faster than wool, but slower than other man-made fibers.
Holds shape; does not shrink or stretch.
Drapes well; falls easily into soft folds.
Absorbs moisture; is comfortable to wear.
Is resistant to insects and mildew.

' ' '

Vicara, like wool, is less strong when wet.
At present is best when blended with other fibers.

ACRILAN*. . . *The new acrylic fiber.*



Acrilan looks and feels wonderful, too. Lighter per handful, luxurious to the touch, gives fabrics remarkable stability and soft hand.

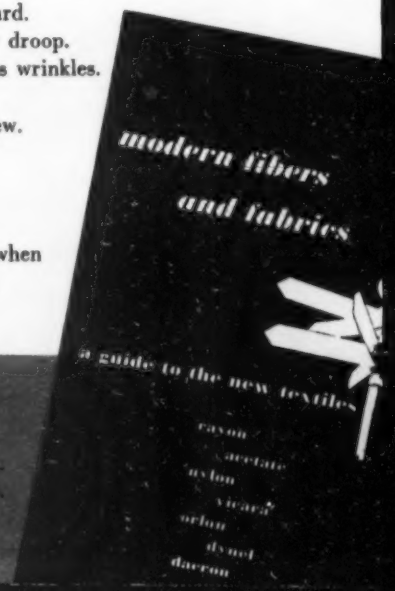
Acrilan-wool suiting

**Chemstrand acrylic fiber*

ACRILAN washes easily; doesn't mat or board.
Holds shape, doesn't shrink, stretch, sag, or droop.
Dries fast; needs little or no ironing. Resists wrinkles.
Keeps pleats and creases, even when wet.
Is not damaged by moths, insects, or mildew.
Resists stains, cleans easily.
Gives bulk and warmth without weight.

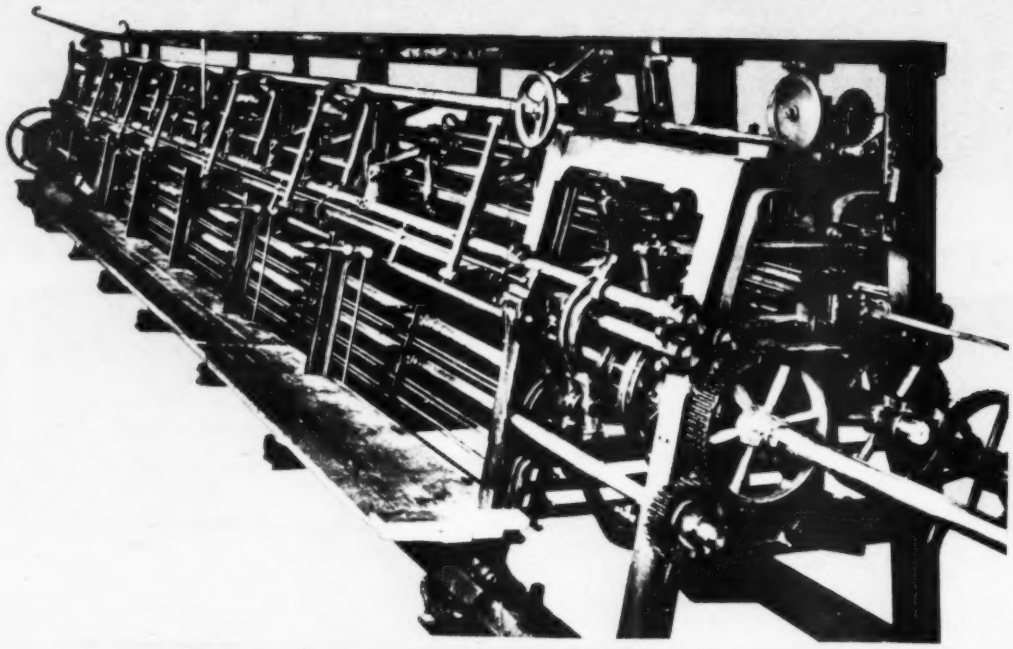
' ' '

Affected by extreme heat. Use *rayon* setting when ironing. Does not readily absorb moisture.



GUIDE

The material used is from J. C. Penney's "Modern Fibers and Fabrics" booklet, published in collaboration with AMERICAN FABRICS.



It is a far cry from the old-world lacemaking art to the contemporary production of lace by the fabulous Levers machine.

7

Lace gauntlet gloves by Schiaparelli

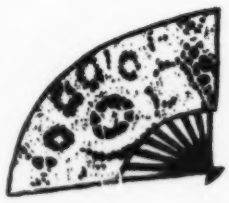
LACE

LACE AS A FABRIC has been a favorite of women from time immemorial. This aristocrat of fabrics is now entering a new phase of its long and honored history. We are witnessing a most interesting phenomenon today in that we are seeing lace boldly making its way into wider markets, achieving popular acceptance on a scale never seen before. No observer in the fashions and fabrics field can help but be struck by the means by which lace has made its way into unorthodox areas.

In this story, American Fabrics presents not only the traditional, but also a series of interesting and significant uses of lace. Inevitably, our story focuses on designers because there has been a growing interchange of ideas between the designer of fashion and the designer of lace. The fruits of this interchange have been of the happiest kind and the consumer has been the recipient of new and exciting fashions.

Lace has found its way into the *young* market, into the accessory market, into the sportswear market; it is flirting with the men's industry. And in the lingerie market, where lace has consistently played a glamour role, the more lavish use of lace has given a new face to an old story.

Besides the impetus afforded by innovations in styling, the introduction of modern man-made fibers has served to increase greatly the mass market potentiality of lace. Acetate, rayon, and especially nylon have helped to give lace a practicalness and durability it never was able to achieve before. We feel that the lace industry has just begun to plumb the depths of this added feature of practicalness, and with more and more experimentation going on throughout the industry new and greater horizons are in the offing. A good example of this is the current testing of Dacron in lace. This new fiber is expected to give a better hand and more strength.



Cotton laces, too, have found great acceptance in the sportswear and spectator sports markets, because of their packability and their washability. Wool laces, with their sophisticated appeal, are making more and more frequent appearances on the American scene. And perhaps as significant as any other single factor — the Paris collections, from a high fashion point of view, corroborate the judgment and daring of our designers who are manifesting such ingenuity in their use of lace.

Turn the pages . . . and read what many topflight designers say about why and how they use the laces produced by the fabulous lace loom. — *Cora Carlyle*

French couturier Serge Kogan uses domestic cotton lace by D. Strauss for an exciting new bathing suit.

BETSE CANNE

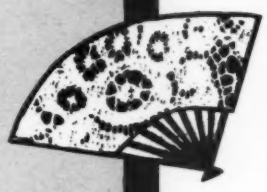
of Horwitz & Duberman

I HAVE BEEN more interested in lace due to the appearance of the coarser, heavier types like the wool laces. The new finishes in stiffening laces have also made them more adaptable to the silhouettes I favor. To me, colors in lace seem truer than they did in the past.

In these days when the average girl leads a very active life — when travel is part of the average girl's life—the non-crushable feature of lace is a great factor. To have a dress go from the suitcase on to one's back without mussing is a real boon.

Lace today runs the fashion gamut from daytime to evening wear depending on its texture, pattern and color. It can be handled in a tailored or dressy manner. I combine lace with almost every other fabric — fine laces with pure silk or cotton, heavier types with denim, linen or corduroy.

Betse Canne's slim coat of white lace, lined with Bates' Disciplined cotton, is younger than springtime!



The first thought that I wish to express about lace is that it must in its design speak for itself.

With square neck, tiny sleeves and restrained gored skirt, this cotton lace dress of Anne Klein's exemplifies her approach to lace to achieve a young sophistication.

And it is my aim, whenever I design a lace dress, to achieve utter simplicity in the basic lines.

Wool lace lends itself beautifully to the sophisticated sheath, as it has the desirable texture and hand.

ANNE KLEIN

of Junior Sophisticates

Speaks about Lace

I try to depart from the traditional expression of lace by giving my dresses a young sophistication.

We have been very successful with the sheath which we predict will be stronger than ever.

Anne Klein's wool lace sheath dress with scoop neck, tiny cap sleeves and taffeta cummerbund.

I try not to gild the lily. By that I mean that lace needs no additional embellishment.

HELEN BENCKER **of Laros Textile Co.**

THE IMPORTANT THING in my opinion is to understand — and never forget — the true function of lace. It should not be merely plastered on, but rather used to accent the essential function of the garment. For example, lace should mould the bust or help to accent the corseted look. When the silhouette demands, as now, a type of slip for under the sheath, stride room is also necessary; I therefore use lace to outline the pleated section which gives that walking room. The wrapped look is one of the season's new looks, and underwear must be designed to fit that very look. Naturally, no one silhouette will take over to the exclusion of all others, and I will incorporate many types of slips to allow the consumer to choose in accordance with her wardrobe.

1. A typical example of Helen Bencker's use of lace . . . functional and attractive and conforming to the current slim silhouette.

2. The fluted section of the skirt gives walking room to the slip and yet maintains the popular slim silhouette.

3. Helen Bencker uses lace on the diagonal on the bodice of the slip (1) to accent the wrapped look and (2) to permit more strain absorption.

10/7/52 — approved

10432
Much 36

Dress designed of Dresden Rose lace by Miss Marie of Pandora Frocks.

One of Mary Ann Wackenhut's outstanding lace designs—the Dresden Rose—created of nylon and acetate.

BY AMETEX

MARY ANN WACKENHUT of Ametex

A YOUNG GIRL WAS GRADUATED from Skidmore College in 1950 where she had studied textile designing. Her courses included also the study of lace designing. When she applied for a job with the American Textile Company, it was more with the idea of making a start toward a career than with the desire to become a lace designer. The ways of fate are strange — and before she knew it, she was directed to that department at Ametex that was concerned with the creation of lace patterns. For six months she studied all the pattern possibilities within the framework of a lace machine.

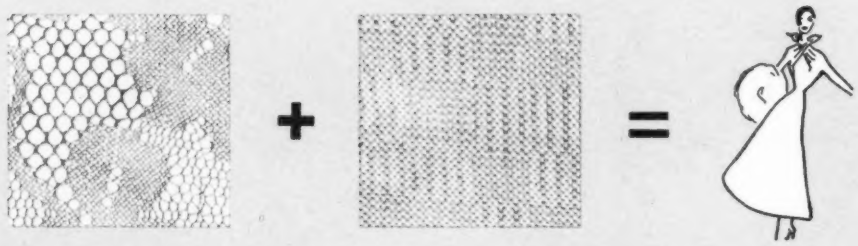
It is one thing to conceive a fresh, new idea in lace on the designing board, but it is quite another to have the complicated Leavers machine translate that idea into an actual lace fabric of the designer's conception. Woven textiles, for example, are far less complicated than lace. Nevertheless, Mary Ann Wackenhut, defying tradition and applying herself strenuously to the task, was able in a short time to work successfully with dress and lingerie designers who are always looking for new materials that will lend themselves to their fashion design needs.

In this day when it has been discovered that lace has many more possibilities than were previously realized, no new idea, no matter how seemingly far-fetched, is too much for Mary Ann Wackenhut to try to work out. As an example of her thinking, on a recent trip to Europe, the balconies and patios of Italy inspired a new type of design.

It is a challenge for her to do something new — something different — although she has discovered that when it is too different, designers may not be ready for it. However, with an amazing record of success with the patterns she has created, Miss Wackenhut, who is all of twenty-three, has reason to look forward to a long, productive career.

JANE DERBY

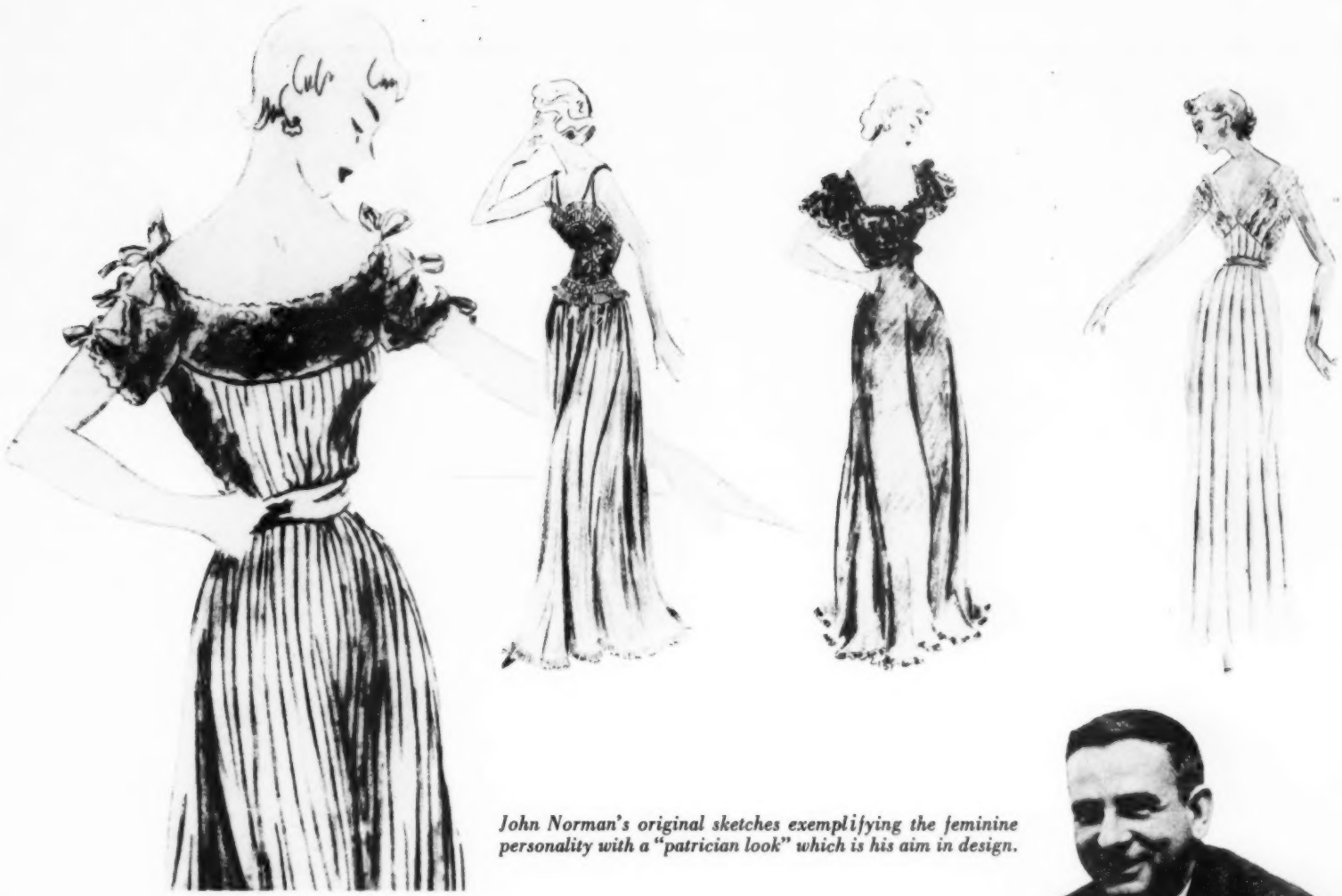
FOR ME, THERE IS no end to the ways of using lace. In today's designing, lace is one of the most important means of expression. I have used cotton laces in my most expensive creations. I have laid lace over wool; I have appliquéd it over fabric. Lace is truly coming into its own. Women travel so much—and lace travels well. Also lace is a twelve-months-a-year fabric. For the simple clothes that I design, I think in terms of introducing combinations like narrow laces with grey flannel, or lace over khaki. My credo is: SIMPLICITY IN DESIGN AND SHOCK IN FABRICS. I do prefer the soft laces like Chantilly and Valenciennes. Never am I an extremist, and my aim is for women to look feminine and pretty, and to be comfortably dressed as well as fashionably correct.



White cotton lace over khaki gives a new look to this four-piece costume by Jane Derby.

A fitted bare-top halter with lattice straps over the shoulders plus elegant shorts are two of the costume parts.

Collars and cuffs of ecru lace over white organdy accent this dinner dress of pure Irish linen designed by Jane Derby.



John Norman's original sketches exemplifying the feminine personality with a "patrician look" which is his aim in design.

JOHN NORMAN

I ENTERED THE LINGERIE field because I saw in it the possibility of adding much needed excitement. I saw, too, that there was a need for high fashion in the middle price range and that women wanted as much high fashion in their intimate wear as their outer wear. I believe in lace so strongly because it helps to give a woman an extra personality. If she's tailored by day (and many women are definitely dressing that way), she wants a more feminine and dressy look at night. My aim is to achieve a patrician look with lace, and it is possible to do that without sacrificing glamour. My nightgowns are fitted as carefully as a dress. May I tell you whom I really have in mind when I design gowns and lingerie? I invariably think of men because I know that men have the need to see women at home in something more inspiring than a Hoover apron. More men than we realize buy lingerie for women, and they must be further attracted to coming into a shop by the eye appeal of such merchandise. I often think of an incident that occurred during the war. A soldier, seeing one of my gowns illustrated in a magazine, wrote to me and actually ordered one from overseas. This was how he visualized his wife dressed for him when he returned from the wars.

WALTER FLORELL *concocts a sophisticated cocktail hat of lace ruffles and velvet bows.*

HAROLD SHELAN Style Co-ordinator **PEGGY DE CASTRO** Designer . . . Jonbarry Sportswear Inc.

Our problem was to create, at a price the young customer can afford, the style and attractiveness she sees in expensive merchandise.

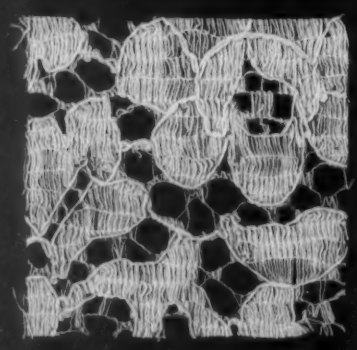
With that end in view, we designed lace separates that are different and wearable. To make them more practical, we lined them with taffeta.

Peggy de Castro, who designed the lace separates for Jonbarry which have spearheaded a new movement in lace apparel.

Because of volume production, we produced these within budget reach. We've streamlined a traditional fabric for the 20th century.

Let us also give credit to the introduction of stronger laces—a design development which takes them out of the perishable category.

One of the Jonbarry taffeta-lined separates costumes made of cotton and rayon lace by Max Mandel. An outstanding example of the new fashion uses of lace. Right, Miss Rhoda Stahl of Neiman Marcus with Mr. Harold Shelan.



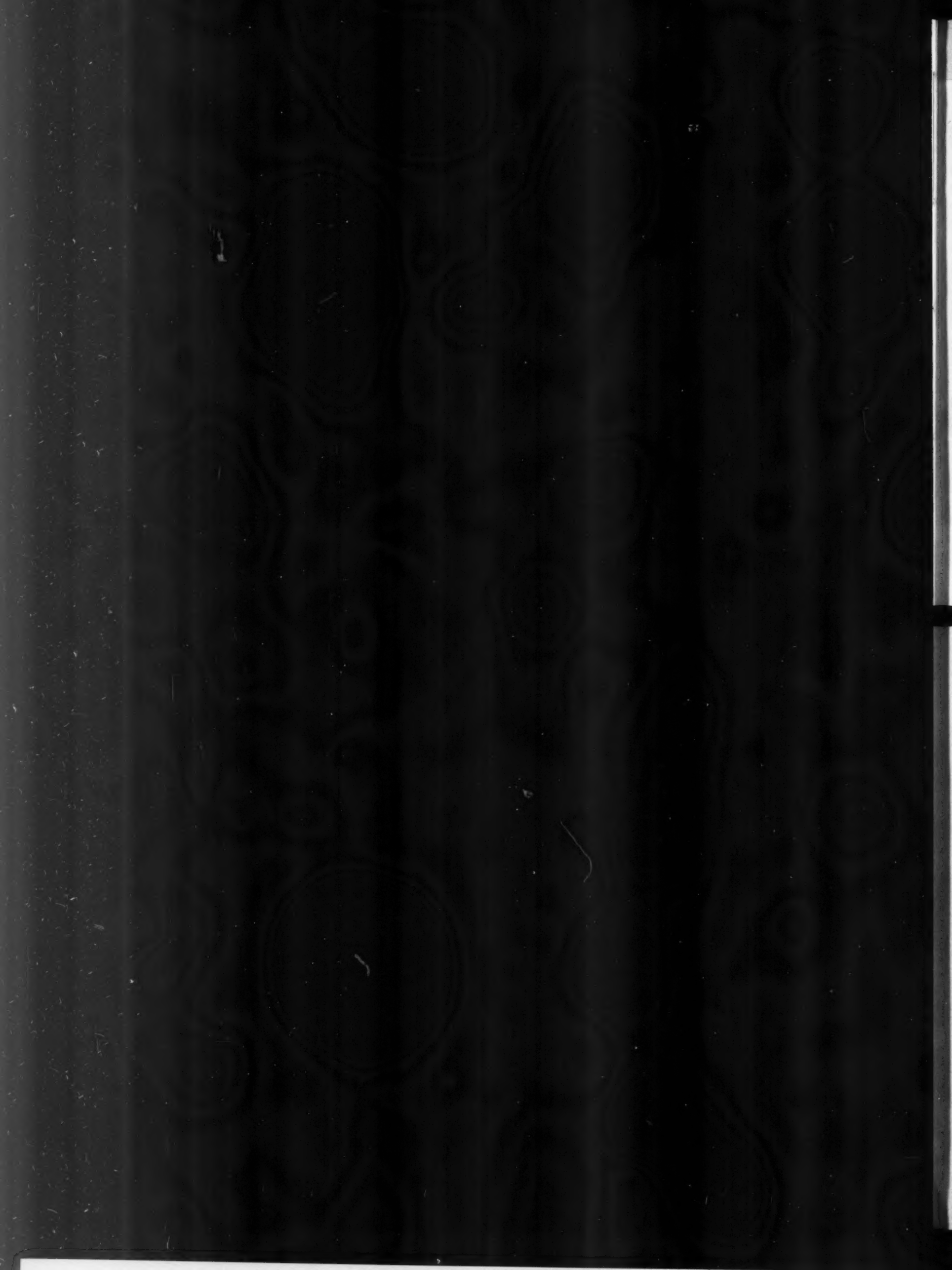
Cotton lace in floral pattern used in the dress at right. Especially designed for the new young look.

By Max Mandel Laces

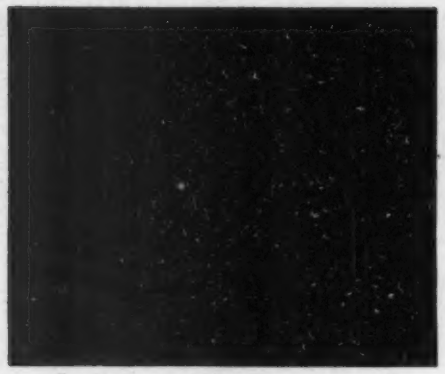
RONNIE SIMON of Teena Paige Fashions

Today, young girls don't like gingerbread but they do like simple, smart styling at a price, and here is just where lace fits in so beautifully. Lace patterns are so young and pretty and I always design the simplest silhouette. Is lace too sophisticated for the young junior or teen-ager? *Not so!* I always include it in my holiday line. As a trim, too, there is nothing more flattering as it gives a fresh, uncluttered look. I combine lace with linen and cotton, in fact any fabric.

Dress designed by Ronnie Simon for the teen-ager who finds in lace a brand new fabric medium that fits in with her needs for holiday festivities.

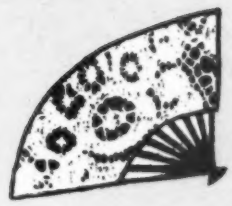


Ted Shore designs an evening dress with scoop neck bodice and shepherdess skirt of lace and net.



Leaf pattern with center guimpe, of rayon pattern on a nylon ground.

By LIBERTY FABRICS



TED SHORE

of Will Steinman & Co.

WHILE I DESIGN MY lace dresses primarily for the young debutante, women of small sizes can also wear my dresses. When I conceive an idea for a dress, I keep a particular figure type in mind rather than an individual. I believe that lace must speak for itself; my dresses are therefore always designed simply but with one outstanding detail to give the dress a lift. An example of this might be the use of an exaggerated velvet bow in the back. The young person has been attracted to lace because we have given lace a young look. The trick is to make sure of choosing a pretty lace, and then the dress practically designs itself. What a designer eliminates is what counts; restraint becomes a virtue. Simplicity is the keynote of my designing, and since I am going into metallic and re-embroidered laces, I will hew even more to that line of simplicity. Women today have a *Let's live!* psychology, and for me it explains their dressing up. What better fabric for that mood than lace?

One of Ted Shore's favorite combinations — lace and velvet. He achieves his objective by the use of a carefully selected lace, dramatized by a dashing velvet accent.

Mother-of-pearl beads embroidered on black lace for an evening dress from the Samuel Winston collection.

Evening dress from Pierre Balmain of grey Chantilly lace in combination with off-white peau de soie.

Harvey Berin cocktail dress designed by Karen Stark. The band of scalloped lace is re-embroidered with soutache.

Cocktail dress of black Chantilly lace over black taffeta sashed with taffeta, a Ben Reig design by Omar Kiam.

Mainbocher's soft evening dress of black lace over grey and green gauze, with delicate black lace stole.

Dinner dress of black French wool lace over beige taffeta, with full skirt — from the Tina Leser collection.

Cocktail sheath of grey embroidered lace over pink silk taffeta designed by Jacques Fath for Joseph Halpert's collection.

Instep-length dance dress of Alencon lace and net in tints of grey and pink, from the Samuel Winston collection.

IT'S MADE of LACE!

It's Lovely . . .

It's Feminine . . .

It's Fashionable . . .

A raspberry-pink evening dress of Alencon lace over silk taffeta from Harvey Berin, designed by Karen Stark.

Dior's black and white floral pattern French lace strapless bouffant evening dress, with flared jacket.

Ceil Chapman, one of the first to see the popularity of lace, introduced th lovely creation last season.

MR. NORMAN

of Norman Modes

on the subject of lace . . .

Yes, lace is the most feminine of all fabrics. . . .

My styling is for the young, and lace follows the current silhouette as do other fabrics.

With lace, it is possible to get a custom job within the framework of mass production.

I work very closely with the lace manufacturers in order to achieve distinction and practicality in the finished designs.

Another way to put it is to say that the fashion industry helps design laces, and the lace industry helps design fashion!

Interesting Facts about LACE

Lace-making and lace-wearing have a long and romantic history, from its painstaking beginnings in fifteenth century Venice to the present-day accomplishments of the lace machines. In contemplating the mass use of lace today in all the fields of apparel and decoration, one realizes today's manufacture of lace is a major textile achievement.

In the early days of lace-making by hand, two fundamental systems were developed. Needlepoint was a product of the Venetians. The Flemish at the same time invented the bobbin method, worked over a cushion with pins and bobbins. The exquisite handiwork of both these basic types has been successfully duplicated by the modern lace loom.

During the Renaissance, the rapidly growing hand-made lace industry was so profitable that the Venetians were not allowed to wear lace; it was sent abroad, to bring revenue for the Doges.

The famous finance minister of Louis XIV, Colbert, was successful in transplanting the Venetian lace industry to France. He even bribed Italian workers to emigrate to Alencon and teach the lace-making art to workers in France. Such were the beginnings of the famous Alencon laces and the rise of the French lace industry.

The lace ruffs of Elizabethan fame started a fashion which worked the early lace industry at fever pitch. Elizabeth's own ruffs grew to three-quarters of a yard deep with edges comprising twenty-five yards of lace.

By the seventeenth century, the ruff had passed its fashion zenith, but lace continued in increasing demand. The industry spread through Europe. Today machine-made laces characteristic of the original types are designated by the names of the early lace centers . . . Venetian, Alencon, Chantilly, Valenciennes, Burano, etc.

The first attempts at making lace by machine were started in England on a stocking frame, or knitting machine. The resultant product was a fabric that was lacy in appearance.

The first really successful net machine was patented in England by Heathcoat in 1809, and four years later came the Levers machine embodying the principles used today.

Jacquard's invention was applied to the lace machine only a century ago, years after it had revolutionized other fields of the textile industry. It made possible the endless variety of patterns for lace that we have today.

Chantilly-type lace in a new floral pattern, made of nylon and acetate.
By I. Zendman Inc.

SYLVIA ROODNER
of Seamprufe

I BELIEVE IT IS NECESSARY for the underwear designer to work closely with the lace maker. The designer knows exactly how she is going to use lace on her garment, and the lace manufacturer can help to achieve what she needs. Laces have to be different; they just can't be

the same that have been used for years. A consumer is attracted to something new. I frequently go to Europe and, after seeing the laces in Calais or Belgium, I talk with the lace manufacturers here and together we work out patterns. It is my opinion that many of these lace men have been lax in making outstanding laces. Instead of creating patterns, they merely copy. I would like to see more of their designers *originate*. When they do come out with something outstanding, the public always eats it up. Women just love the extravagant use of lace for wear in their boudoir. It makes the average woman feel like a film star.

MISS MAMIE VERRAND
of Andora Frocks

BECAUSE I DESIGN dresses for the more sophisticated woman with the mature figure, I always try to think in terms of slimming and glamorous clothes. I combine lace with tulle for softening effects, and for diverting attention from largeness of bust or hip. Through such means, it is possible to minimize considerably the large look. I use only the finest laces for my dresses. Nevertheless, I design them in such a way, in combination with other fabrics, that they are within the reach of the average pocketbook. From my twenty years' experience, I have come to the conclusion that women love lace because of its slenderizing, glamourizing effect, as well as for its crease-resistant practicality. For me, color is the essence of life. Right now we find that beige, lavender and navy blue are enjoying great popularity. I seek constantly for variety to enhance the basic silhouette. As an example, I may introduce sequins or pearl embroidery as a minor accent where it will impart distinction to a dress.

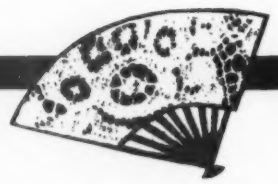
Typical examples of Miss Verrand's skill in achieving designs with a touch of glamour for the mature woman.

Miss Marie is singularly successful in creating of lace the kind of wedding gown in which every bride likes to envisage herself.

MISS MARIE

of Pandora Frocks

SINCE I WAS a child, I always wanted to design clothes — and, more particularly, I wanted to dress brides. And how lucky it was for me to come to Pandora and do the very thing I had always dreamed of! Lace is the most fascinating fabric and it suits everyone, even little girls. I work mostly in the bouffant silhouette as I think it is very young; also it sells better. I like most of all the Chantilly types and like to combine laces with sheers, satins and tulles. We specialize in wedding dresses, and naturally every young bride sees herself in the most extravagant kind — the lacy kind!



Waltz-length dinner or dance frock, typical of the dress-up designs which Doris Mandelker feels are best expressed in lace.

DORIS MANDELKER

of Filcol

JUST AS NO OTHER GEM can substitute for the diamond, there is no substitute for lace. A lace dress is a must in a woman's wardrobe. Lace, today, can go so many places. A woman is not overdressed when she wears lace for a dinner, and she can wear it equally appropriately to a ball. Somehow, I never make the same mistakes in designing with lace as I do with other fabrics. I have always treated lace in a young way with scoop necks, long backs and gay colors. While I have always favored white lace, this season I have gone into royal blue and red. For gay parties and formals, pastels have been a successful choice. Lace manages to look just as elegant in a fifty-dollar dress as it does in a two-hundred-dollar one. Working with the lace people and being able to get my ideas translated into the actual fabric have been a great help. Lace is so popular today because it is the most flattering of all fabrics.

MISS NEVA CEDARHOLM
MISS MILDRED SCHMIDT of Luxite

Users of over 10,000,000 yards of lace during the past season, Luxite's lingerie designers, Miss Mildred Schmidt and Miss Neva Cedarholm, summarize the place of lace in their design thinking.

WE FEEL THAT as long as the silhouette in fashion is primarily feminine in design, as it certainly is at present, there will most likely be a still further increase in the use of lace for lingerie to add femininity and glamour. The trend toward the empire or high waisted look will undoubtedly be reflected in lingerie. Linings of lace, particularly Chantilly, in a contrasting color look new. Pleating is an innovation for lace. The waltz- or dress-length in nightgowns is new and gaining in importance. More emphasis on back interest is developing in lingerie. The full circle skirt is freshly important. Often a full silhouette over slim lines combines two important fashions. Color combinations to achieve an iridescent effect look very good for the future. In all of these trends, lace is playing an increasingly dominant role.

A group of characteristic Luxite designs in lingerie items with lace accents that place interesting fashion emphasis.

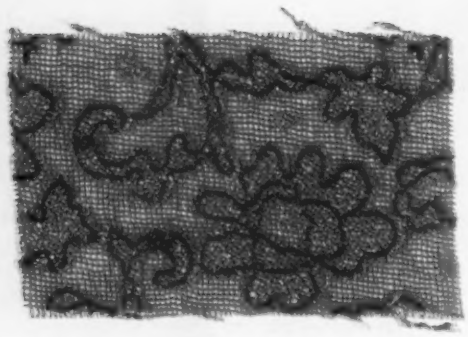
LACE IS A ROMANCE FABRIC which I have always enjoyed using and which I plan to work with even more extensively in the coming seasons. Wool and embroidered laces have given me a completely new feeling this season because they have taken lace completely out of the underwear class. More styling, and especially *young* styling, of lace patterns has helped considerately to attract the misses and junior class to the beauties of lace. An example of this is a feather lace pattern on a fine net ground which I have used in royal blue to design a dress with that desired young look. My dresses, all of them, are made for those who like simple but smart clothes . . . who are young in mind . . . who have more taste than money.

MADELINE FAUTH

of Arkay, Jr.

Madeline Fauth is shown below modeling one of her own lace creations.

Interesting new developments in the field of lace



Nylon bouclé lace by
AMERICAN SILK MILLS

NEW PROCESS makes lace with weaving equipment

THE TIME-HONORED quest for a way to make lace without the use of lace machinery has brought forth one of the most fascinating and baffling of fabrics you are likely to encounter in many a long day. This fabric looks like lace, is offered in classic lace patterns, and answers to the textile dictionary definition of lace but is made entirely on weaving mill equipment by one of the leading producers of woven textiles, the American Silk Mills.

The initial presentation of the Amer-Mill lace is destined primarily for use in blouses and dresses. It is not a lingerie lace, but potential uses are myriad and it will be only a matter of getting around to them. There are reasons to believe that the fabric will prove ideal in the footwear and millinery fields.

Milton H. Rubin, president of the company, explains his process as the application and rearrangement of techniques in ways that have not been used before. The logic and philosophy back of it is like that which has produced the miracle products of modern industrial chemistry. Reduced to its lowest terms, the operation is nothing more nor less than a matter of re-shuffling well known entities and using them in new ways.

A very simple analogy comes to mind. A chemist takes coal tar and makes a dye stuff out of it. Another chemist takes coal tar, rearranges the molecules, and produces aspirin. Still another chemist, without changing the raw material, alters the molecular structure and comes up with synthetic rubber.

While the new technique of the American Silk Mills is applicable to all fibers, natural as well as synthetic, the so-called miracle fibers, with their intrinsic strength and resistance to chemical finishing, are more suited to the new fabrics and make them economically feasible. In view of the great cost advantage enjoyed by the weaving operation over the lace operation, the fabric is relatively inexpensive to produce. The price appeal will be particularly important in the case of lace for shoes and for mass produced millinery, where the entire business is predicated on low raw material costs.

No Fiber Limitations

Just as there are no limitations with respect to the fibers that can be used for Amer-Mill lace, so there are no restrictions in the matter of blends. Synthetic fibers, old and new, together with natural fibers in any effective combination are all grist to this particular mill. The company reports that their own *Totarn* is an invaluable blending ingredient for improved appearance as well as strength.

It is rather interesting to note that France, the mother country of lace for couture, is the native land of the first designer to feature the new lace. Conti, Inc. in this country has made a dress and jacket according to an original Jean Desses design featuring this lace which has been photographed for the October Du Pont fashion series.

You can certainly cause a lot of excitement in the world of fashions and fabrics by teaching old looms new tricks — or rearranging textile *molecules*.

Additional examples of American Silk Mills' designs in nylon bouclé lace

Interesting new developments in the field of lace

Jacquard bobbinet of nylon and Lastex
by THOMAS WILSON

ELASTIC BOBBINET . . . a fabulous fabric

SINCE THE FIRST trial runs of Lastex in lace occurred at Liberty Fabrics of New York, which presented the lingerie world with delicate elastic laces of high stretch and wonderful promise for fitting intimate apparel, corset houses have found in this material an avenue to the creation of panties and girdles with very mild figure control suitable for the small or youthful figure.

Power Lastex plus the bobbinet loom launched the first *power net* which promptly played a large part in extending many corset lines to embrace more size, type and age groups. Its technical attributes for this use were superb — it not only had very high tension in ratio to weight, but combined a positive power in the warp with a milder but effective stretch at other angles. This two-way stretch was a corset designer's ideal for achieving control around the body and yet pliancy every other way for body movement. Another important feature was that bobbinet weaving encased the elastic yarn with other tightly twisted diagonal yarns so that the fabric retained its shape and was remarkably durable. In addition, the bobbinet surface pattern was similar in either direction and both sides were exactly alike — a manufacturer's dream fabric for lay-ups and the cutting table.

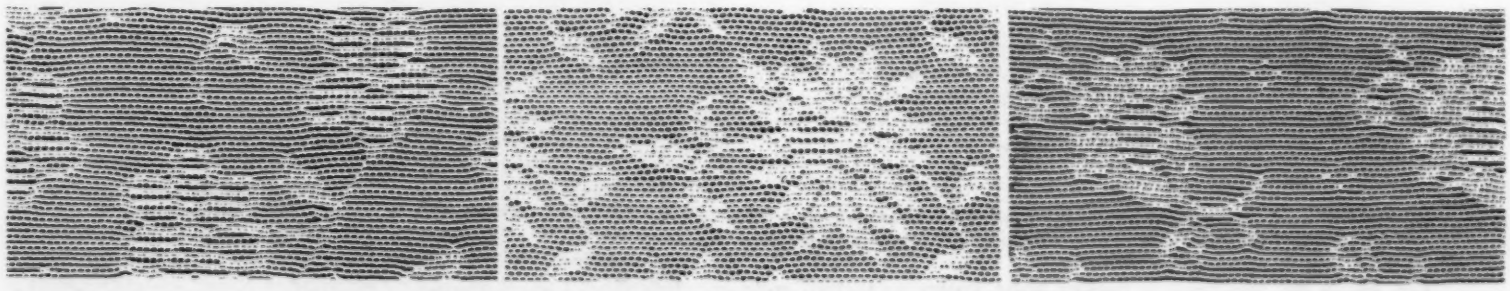
Jacquard Bobbinets

Recently Thomas Wilson & Co.'s designers have further stimulated the market with the introduction of rich patterns via both the jacquard and dobby processes. The light-weight airiness of the basic fabric has been retained but new fashion interest has been added, and it can be said that bobbinet has now acquired the beauty of its sister fabric, lace, without sacrificing any of its wonderful functional attributes.

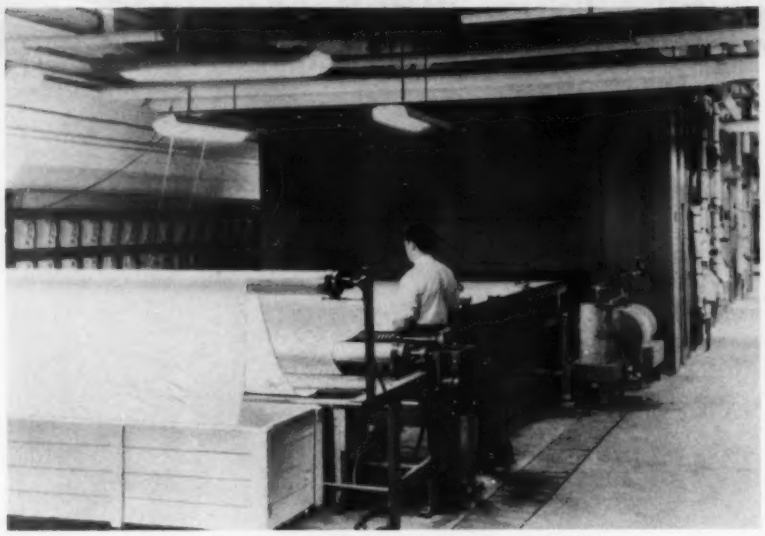
From this development story it must not be inferred that elastic lace and bobbinet were without competition from other fabric fields. In a sense their success challenged weavers and knitters to meet corset needs for lighter, more porous and more effective figure control fabrics. Weavers countered with the sturdy elastic lenos, and knitters evolved pliable and comfortable meshes with Lastex via circular, flat and Raschel knitting equipment. A particularly successful offshoot of the latter was launched after the War by both the Reiner and Kidde firms which, after several years of development, achieved warp knitting machines that produced a very good simulation of power bobbinet. These new power nets had the advantage of lower cost, but they lacked some of bobbinet's superb features. They too won a strong place in the corset market.

* * *

From elastic laces to power nets to patterned nets has run the trail of this segment of the lace industry — a trail marked by solid market acceptance among several trades and literally hundreds of manufacturers. Credit for this success story lies in large part with the practical ingenuity of yarn and fabric technicians, but is also due the fashion world for its generous approval of these new laces which combine elesticity, sheerness and beauty.



A variety of elasticized jacquard bobbinet designs inaugurated by Thomas Wilson



Modern lace finishing equipment can be built to process fabric up to a width of 290 inches

PROBLEMS OF LACE FINISHING

Problems in the finishing picture are constantly arising for the lace manufacturer with every new fiber and resin development. In preparing this article the Editors have pleasure in acknowledging the cooperation of Proctor & Schwartz, world's largest manufacturers of industrial drying machinery where wet processing and heat application are involved in the finishing of fabrics.

IN THE LACE INDUSTRY, as well as in the rest of the textile field, the following problems are involved in the finishing picture:

1. Drying of lace after wet processing.
2. Drying and curing of resin finishes.
3. Stabilization by heat treatment of thermoplastic synthetic fibers.

The equipment used for these various processes can be described as follows:

The most common and versatile piece of equipment used by the lace industry today is the wide pin tenter housing. This one piece of equipment in its various forms and specialized designs is capable of turning out top quality finished goods where any of the three problems listed above exist. In some cases one housing has been built to handle all three requirements, and as new finishes are developed and new synthetics come into use this type of machine will doubtless be more and more in demand.

The first housings built were for drying after wet processing and were an outgrowth of the old stationary tenter frame where the lace was pinned on and let dry at room temperature. In order to increase production and to reduce labor, a continuous tenter frame was developed where the lace was pinned on at one end and removed at the other. To make this system practical, it was necessary to build an enclosure around the frame to provide for heat and air circulation, and it is from these early enclosures or housings that modern installations have been developed.

The basic requirements for a good tenter housing or dryer are:

1. Maximum capacity per foot of floor space used.
2. Uniform moisture content of material leaving dryer.
3. Low drying costs.
4. Consideration of working conditions for operators.
5. Sound design and good workmanship in fabrication for long life of machine.
6. Low maintenance cost.

In meeting these requirements, a machine has been developed and furnished to the industry which is shown in general in the accompanying photograph and diagram.

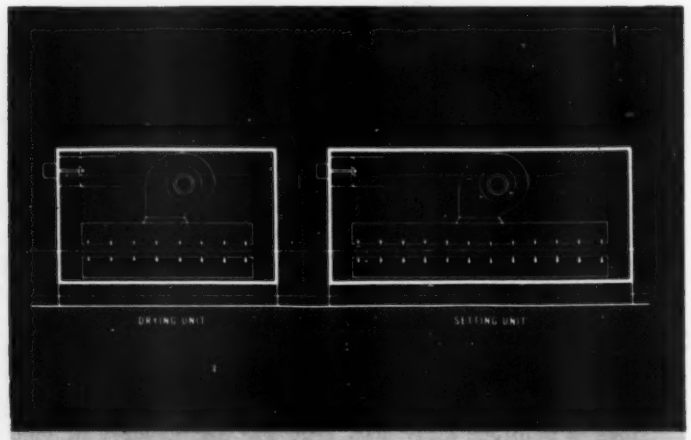
This design has been used in housing tenter frames up to 160" wide. For frames wider than this and up to about 290" a somewhat different design is used, which will be discussed later.

The general construction of this housing is steel throughout and the insulated skin of the housing is completely flush and tightly sealed. A rockwool insulating material is used in various thicknesses depending on the drying temperature used. This construction provides for long life and minimum heat loss through panels.

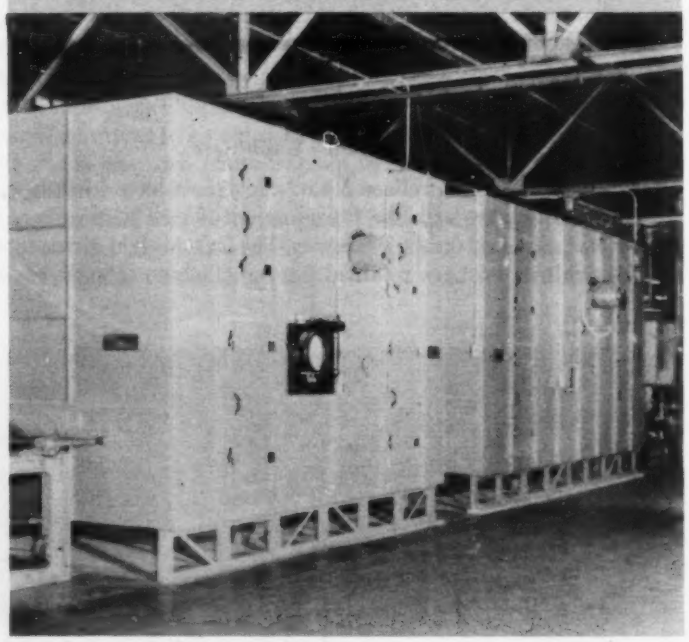
The air circulation system is the key to high production and uniformity of moisture content across the full width of the piece. Turbine type circulating fans are used in conjunction with a carefully designed impingement type nozzle system which runs across the full width of the lace being dried. These nozzles or air jets direct high velocity air against the lace from both above and below. Adjustment may be made for varying the amounts of air impinged from either the top or bottom to suit the requirements for handling any particular design of lace fabric.

Modern Heating Systems

Modern housings may be heated by means of steam, gas, or oil according to the individual manufacturer's needs. Automatic temperature control is provided to enable the finisher to get just the results he wishes and ample exhaust removes the moisture laden air, providing maximum capacity at



The standard Proctor range consists of two housings (enclosing a single wide tenter frame) the first of which is a steam heated dryer for removing all moisture from the fabric. The second is a gas heated, high temperature machine providing temperatures in the 400 degree F. range and uniformity of air application to the fabric to provide uniform stabilization across the full width of the fabric. The internal air distribution system provides an absolute uniform impingement of air on both sides of the material and across the full width.

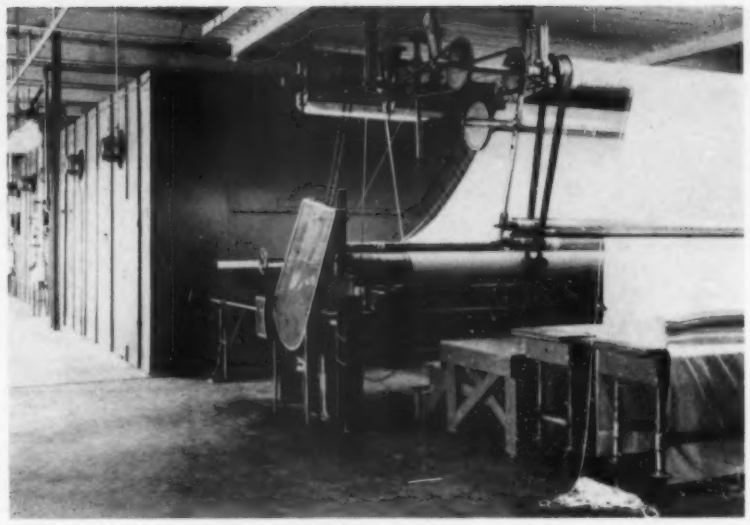


economical drying cost.

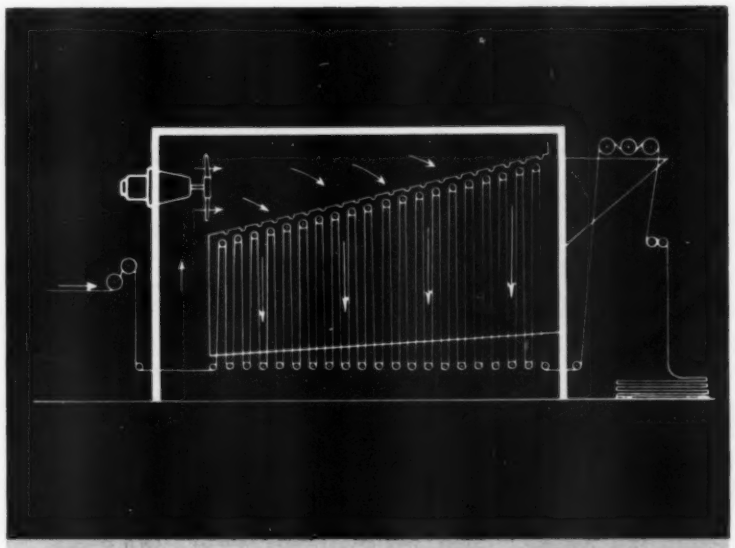
An air lock system is provided at the feed and delivery ends of the housing which prevents hot air from being blown out and cold air from being drawn in over the fabric which could cause non-uniformity of drying and shade in the piece. Preventing the hot air from blowing out into the room also makes better operating conditions for plant personnel.

When housings for tenter frames up to 290" are built, usually for Levers Lace, a different design is employed although the basic purpose is the same. This housing is known as an *Under Housing* due to the fact that all of the impinged circulated air is delivered against the underside of the lace. In machines of this width it is important to keep the horsepower requirements and fan sizes within economical limits and this is a prime reason for air circulation from one side only. The nozzles system furnished with the Under Housing is specially designed to give uniform circulation across the large span of 290" and the construction is the same general type as the two way impingement dryer.

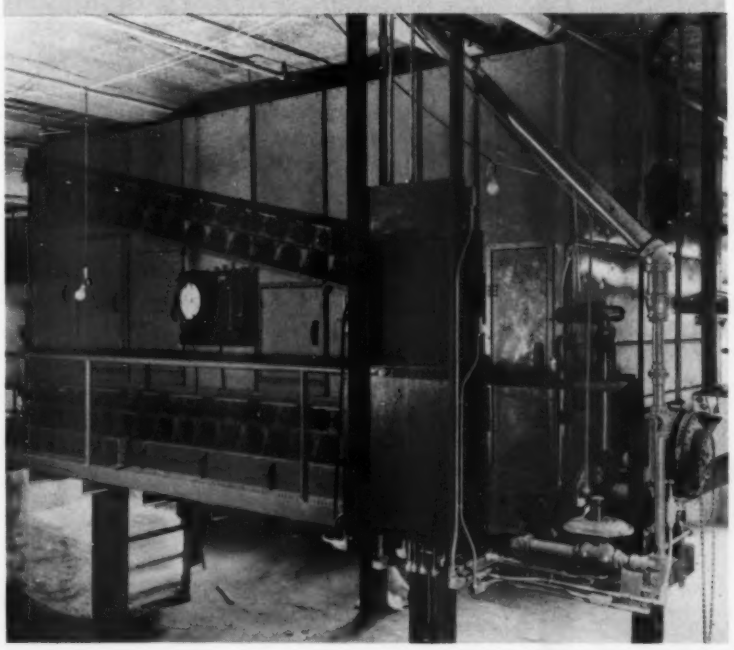
It should be mentioned that although these two types of housings have been designed primarily for the drying operation, they are currently used for resin curing and also for setting nylon laces. In fact, it is possible to utilize either one of these machines for resin work or for thermoplastic setting of lace as long as there is a heating medium which will provide temperatures high enough to do this work. Resin work requires as high as



Output from the equipment is arranged so that continuous inspection of the finished lace is facilitated



In the Roller Curer the material is carried by the rollers through a chamber where air is circulated through the goods continuously.



400°F. and nylon setting up to 450°F. The most common heating medium is gas, manufactured or natural.

Commission Finishing

Not only must the lace manufacturer be considered, but also the commission finisher who will be finishing all wide fabrics such as lace, net, tulle, tricot, etc. He must be able to handle fabrics of cotton, rayon, acetate, nylon, etc., and be prepared for dyeing, resin padding, and heat setting. Here again, a special range has been developed to meet all contingencies. This consists of two separate housings and a cooling unit, and it may be used for drying, drying and heat setting, or curing as the case may be.

One of the big problems in the lace industry is pinning the fabric onto the pins of the tenter frame. Present day automatic guiding and pinning systems as furnished in this country do a rather poor job on this type of fabric. It is believed that the Dalglish electronic guiders and uncurlers may be the answer to this problem, which will be offered in this country shortly in close cooperation between John Dalglish & Sons and Proctor & Schwartz, Inc.

All of the equipment so far described has been for wide lace. What then about the manufacturer of narrower laces such as curtain materials? These narrow materials are usually dried on tenter frames to hold and preserve their pattern, but in the case of resin curing there is another machine available for these fabrics, the Roller Curer shown in the accompanying photograph and cut.

In the handling of material such as marquisette, curing times are as low as one minute. Under such conditions and in view of the lightness of the fabric, the roller type dryer has been found to be ideally suited. In this machine the material is conveyed by a series of individually motor driven rolls. Each roll is individually driven by a *shaded pole* motor, which will automatically vary in its speed with the degree of tension placed upon it by the cloth. This factor obviously prevents stretching the light fabrics and, due to the short time of the cure, high capacities can be obtained, and the speed of the roll is automatically regulated to compensate for shrinkage in the cloth. It is obvious that when material enters the curer at a certain length, it will be running at a given lineal speed, but as the material shrinks, it will have to be compensated for by the speed of the rolls, if *no stretch* curing is to be accomplished.

* * *

In general, lace manufacturers desiring top quality will find it most beneficial to thoroughly recognize their own requirements in reference to the finished product they desire. It is definitely today as always the goal of the reliable machinery manufacturer to furnish his customers with the most up-to-date equipment in order to produce the type of fabric which he in turn must offer to the consuming public.

END

To know what one wants and to pursue that purpose resolutely must inevitably bring results, especially when these qualities are combined with an unmistakable talent. On this page American Fabrics presents the story and design philosophy, through her own comments, of Urleene Chaplain, a newcomer on Seventh Avenue. Miss Chaplain, shown at work in the photograph alongside, comes from Hollywood, where she has had a designing career of unusual diversity and scope.

Miss Chaplain maintains that any worthy coat should be flexible enough to lend itself, with the aid of hat, gloves and bag, to more than one use. She strives for this in many of her models, whether suits, dresses or coats. The two pictures at left, of the same coat accessorized differently, illustrate this in accomplished form. In the photo at upper left, Miss Chaplain has designed a coat of Rodier fabric for casual wear. At left, below, by opening the zippers at either side of the shoulders, the same coat is converted to a perfect evening coat. The tailored version is worn with a Sally Victor hat; the evening coat is shown with a more formal type of hat by John Fredericks.

Below is an Urleene Chaplain fitted broadcloth coat with a dramatic skirt for the woman who wants a feminine and dressy coat. The skirt with its series of loop effects is the result of the skilled cutting which is Miss Chaplain's specialty. The hat is a Sally Victor.

Urleene Chaplain at work.

THOUGHTS of a CONTEMPORARY DESIGNER

In nature one finds a continuous flow of line . . . a sense of relationship . . . a timelessness. That is what I try to achieve. Every line must be a moving, uninterrupted flow, shaping the silhouette. Seaming is used only to introduce and complete that movement. It becomes an integral part of the whole.

* * *

Too many clothes are two-dimensional — two flat surfaces seamed together, a front and a back, with pieces and stuff sewed on. They are without identity and lack a follow-through or sense of relationship. Seams can be an exciting highway for the eye to travel, completing a movement of design direction so that a three-dimensional quality results. Clothes must follow the three-dimension principles of the feminine form.

* * *

Contemporary design demands contemporary construction. I could never understand why it is necessary to butcher a beautiful fabric into little pieces and sew it together again. Fabric is clay — building material — to direct, to mold, to shape. Fabric should inspire a silhouette by feeling its nature and working with its inherent possibilities. I've always cut this way — not to be different, any more than a contemporary architect builds in order to be different. I've had no designing school background. I've always believed one can do anything with one's hands if the desire is there.

I design clothes I like, many of which see years of wearing. I know there are young women who feel the same as I do, who appreciate beautiful fabric and line. What we search for is an uncontrived, casual elegance — the feeling that the clothes were made *especially*, that they are truly ours. Such clothes are ageless because they are truly contemporary. A designer's role is to be daring, but always with the balancing element of good taste. In any art, or way of life, anyone who deviates, who refuses to conform, must expect criticism. The road is risky but satisfying.

* * *

When other little girls made dresses for their dolls, I designed for myself, and then gradually began designing for friends. Later, at sixteen, I set up shop in Hollywood — designing, making the actual clothes, and even being paid! Because I could not get the shoes I wanted for my clothes, I designed them, and then found myself making them. A resident buyer saw the shoes on my feet and brought me to a New York store executive who placed an order. They assumed that I had a factory, so I made the first 350 pairs myself. I had at the time no intention of becoming a shoe designer, and least of all a shoe manufacturer, *and* — I was eighteen years old! Eventually, however, top stores throughout the country bought my shoes and I found myself after all married to a shoe factory that grew like a weed. Henry Waxman, my future husband, met me for the first time with my mouth full of nails, lasting shoes, as one of my shoemakers had failed to show up. His classic remark was one that I'll always remember — "There must be an easier way to earn a living."

* * *

Years ago I designed a pyramid coat for myself, anticipating a trend that began developing months later. The cut was originally conceived for a problem fabric that would lend itself in no other way. This coat was also instrumental in getting a top store interested in me. I remember a well-known merchant on the floor with the coat spread out in front of him, fascinated by its cut and discussing the design and the minimum yardage which I had used.

* * *

Man-made fabrics give the designer additional exciting and contemporary material. It's amazing how science can pour out of the test tube luxurious fibers that feel like natural fibers and often improve on their weak points. Right now, for example, I'm using a jersey throughout the line that is composed of fifty per cent worsted wool and fifty per cent Vicara and that far surpasses any other jersey cloth that I've previously used.

* * *

My greatest pleasure and attainment, I think, are in working with rich woolens. They allow me the fullest freedom for manipulation to achieve fluidity in my clothes — the opposite of the static look.

Textile printing in the 18th century (left) bears notable resemblance to methods still used today (below).

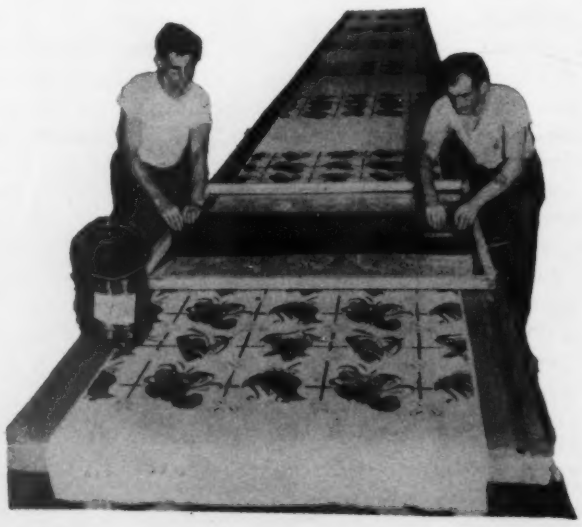
A REVOLUTIONARY TEXTILE PRINTING DEVELOPMENT

The use of electronic controls in a Swiss development, now employed for the first time in the U. S., serves to speed processes and to economize costs.

ELECTRONICS, THE USE OF which controls radar, the sighting and firing of torpedoes, anti-aircraft guns and other military equipment has now been applied to the printing of tablecloths, drapery and dress fabrics. The first plant in this country to adopt it for that purpose is Castle Creek of New Jersey.

The new process, invented by a Swiss Company, Fritz Buser Engineering, is a continuous production method which makes use of electronic devices to control both the patterns and the dye coloring used in the manufacture of printed materials. This replaces the hand work formerly used in these operations.

Screen printing has always been a highly specialized and complicated task. The method being used throughout the industry is little different from that employed two hundred years ago. It requires the laying out of a long piece of cloth, upon which the printers place a series of frames, from which the patterns and colors are printed. A single tablecloth may require 20 men, working in rotation, to complete a pattern and a variety of colors, which might include as many as eight different dyes.



The new operation, made possible by the Buser machinery, is a continuous process in which the cloth moves along a table, the application of the screens being automatic and electrically controlled. The colors are applied by an automatic squeegee operation also electronically controlled. The entry of the cloth into the machine is held straight to fine tolerances by the same type of electronic controls.

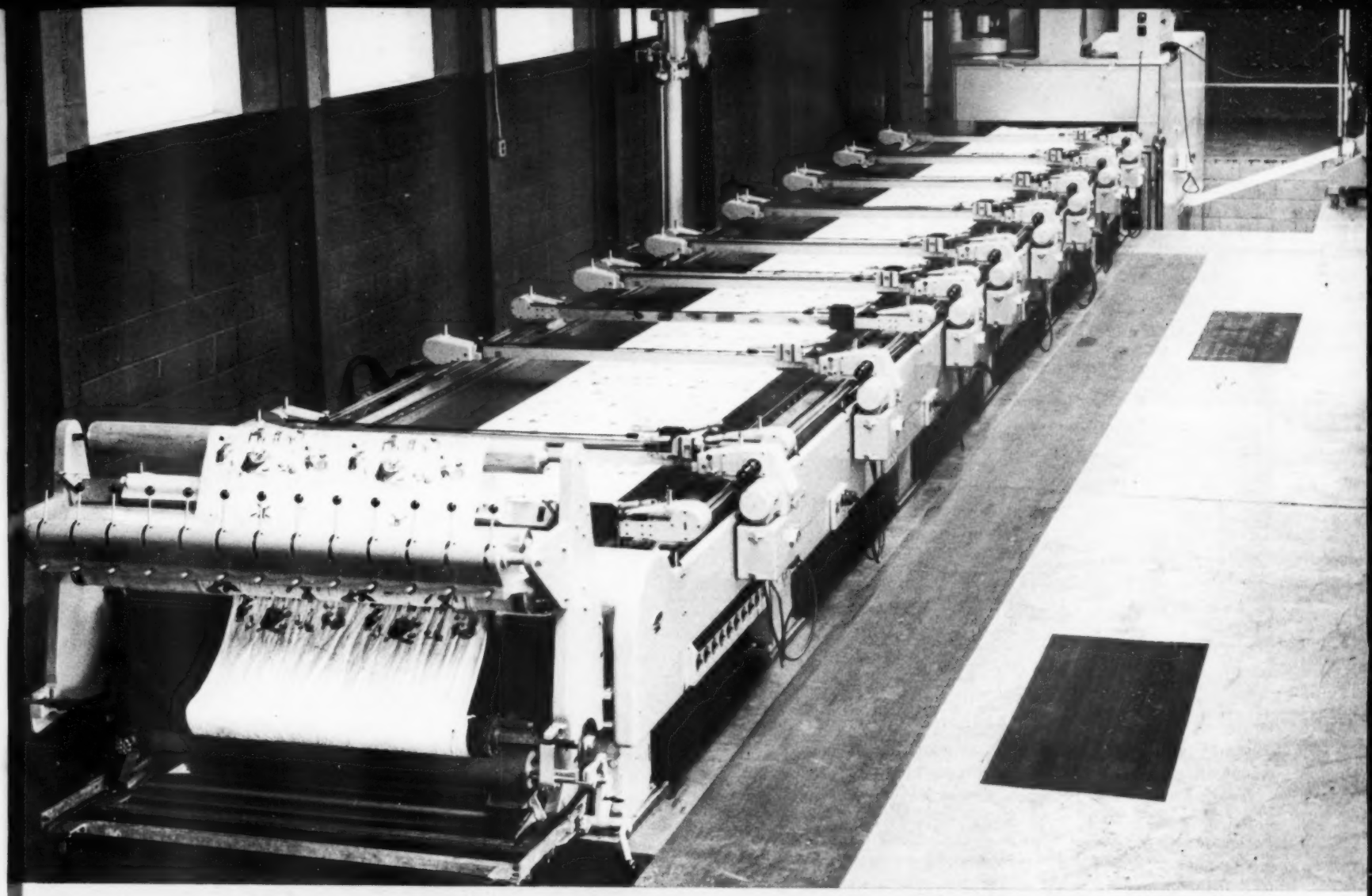
The machine is built with eight frames, each of which can apply a different color if required, and the operation of each of which can be adjusted for pressure, rate of lowering and raising and so on, separately. When the machine is running all frames operate simultaneously, and the cloth moves forward one frame-width between each application of color. The process therefore is equivalent to continuous printing of up to eight colors at one time.

As the fabric leaves the last frame it passes into a drying box, from which it emerges dry and ready for aging.

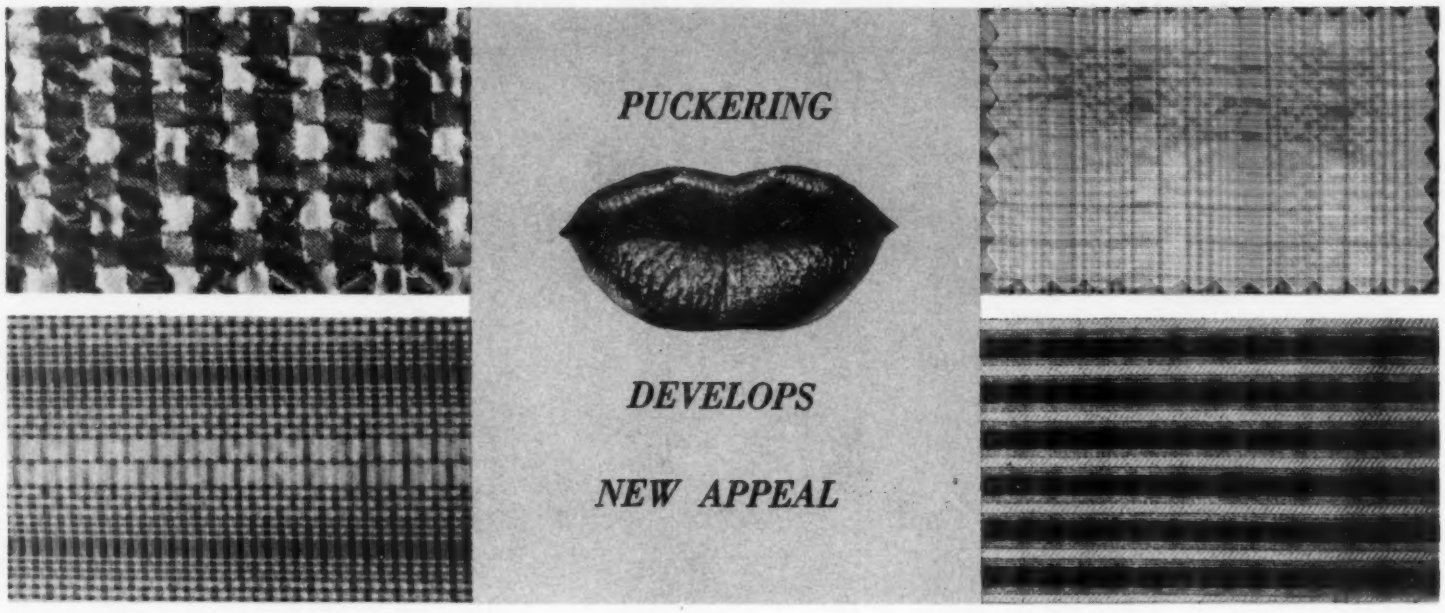
In operation the machine gives the high precision demanded today from any mechanical processing, while retaining the same hand-screened quality associated with traditional methods. This is because modern techniques have been used to speed a traditional method rather than to modify it.

Mr. Frank Percarpio, President of Castle Creek Prints, and one of the industry's leaders, says that proof of the importance of the operation lies in the fact that far more calls for business are being received than can be handled. Mr. Percarpio expects to convert the entire plant to electronic operation, pointing out that, though it takes fewer men to operate the new equipmen, the demand is so great that it will not affect the number of men employed.

Opposite: Linen tablecloth printed simultaneously in several colors exemplifies the capabilities of the new process



THE TITLE OF THIS machine is Automatic Multi-color Screen Printing Machine for Textiles. It ensures the faultless printing of the most complicated designs. All fabrics, from the finest silks to the heaviest linens, are printed with the same neatness and precision. The most diverse and exacting demands, like eight-color printing, in the screen printing process are completely satisfied with this machine. The process is fully automatic. Change-over from one design to another is rapid, easy, and absolutely precise for repeats ranging from 16 to 80 inches. Two men on this machine can print 250 to 450 yds. of fabric per hour. One machine can do the work of at least 20 men using the established procedure.



IN ORDER TO exploit the full possibilities inherent in the technique of puckering fabrics, it is necessary to make a more conscious effort to envisage the design possibilities of this method.

Nylon puckers have become a classic, known for their crinkled appearance and crisp hand. They are found in all types of garments where ease of care is of the utmost importance. Garments made of this type of fabric will retain their shape because of the springiness characteristic of this construction, and require no ironing. The uneven surface appearance gives texture interest to the nylon fiber which would otherwise be flat.

The first efforts were directed to making a fabric with simply a wrinkled all-over texture. This effect was produced through horizontal pucker stripes of various widths in regular repeats to give a wave-like appearance. Names like *Butterfly* and *Hummingbird* given to these have become part of the fabric dictionary.

In order to grow away from the uniform look of this type of design, mills are making an effort to utilize the technique of puckering to create fabrics suitable for specific applications and end uses. Nylon puckers are a practical fabric and in each field in which this fabric has been adopted there are individual design problems.

A Natural for Uniforms

The pucker construction is a natural for nurses' and waitresses' white uniforms. A rather opaque cloth is desirable. Designers have been encouraged to create more decorative woven patterns since uniforms have become more highly styled in recent years . . . Into the monotony of the white, color can come as a welcome change through small neat patterns which give texture interest. The pucker stripes which cross in the warp and filling directions give a more even surface to the cloth than wide horizontal stripes which have a tendency to make the fabric look unironed.

The gay and colorful ideas to be found in sport shirts are proof that men are willing to depart from the conservative style of business clothing for leisure activities. This feeling of greater freedom can be reflected in pucker fabrics for sport shirts. Vertical stripes and small checks seem the most appropriate.

To bring greater variety into these patterns one can experiment with weave constructions. A warp effect twill superimposed on a pucker stripe can give the illusion of a raised cord. This possibility has special advantages on a two shuttle loom as it gives the impression that a greater number of yarns has been used. Some dense weaves can flatten out the pucker completely in certain areas and thereby create the appearance of small dots, others form open spaces to give more porosity to the fabric.

With every change in weave the texture of the cloth will change completely. In fabrics for women's dresses the Hummingbird design is a background for prints, or the previously mentioned design possibilities can be employed, but they can be used in a more elaborate and imaginative way. There are no limitations to the proportions of the design other than what seems becoming to the style of the garment.

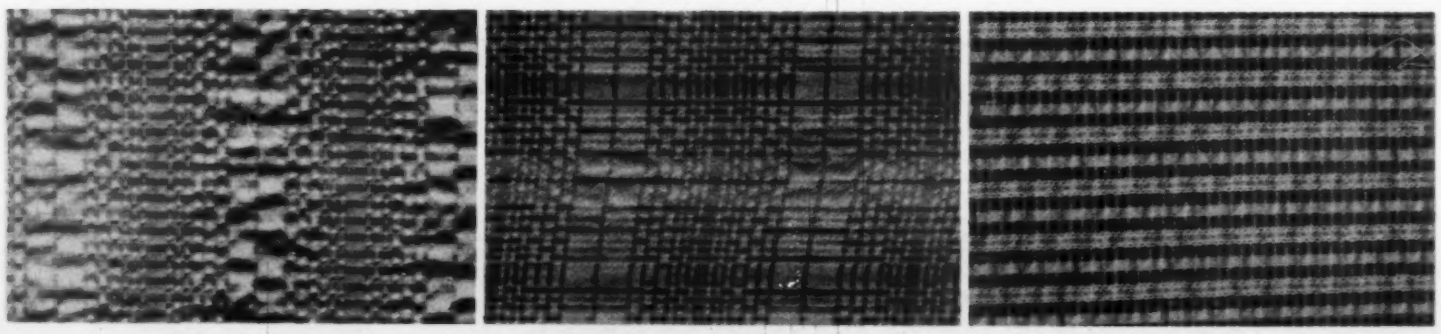
Stripes and plaids can be more pronounced either through real contrast of opaque and transparent areas or through a difference in texture which can be produced by varying the width of the puckered stripes. A very dense wrinkled overplaid on a very transparent background has a ribbon-like effect.

The Use of Color

In addition to texture, color can accent the design. The simplest way to achieve a two-tone effect is accomplished through a cross-dyeing operation. This may be created by the combination of nylon with Orlon, Dacron, or other dissimilar yarns, where only one of the yarns will absorb a certain dye-stuff.

Weave constructions can be arranged in such a manner as to highlight some portions of the colored stripes while others will be subdued. The many variations which are possible through weaves and different arrangements of filament yarns in warp and filling should transform puckers into a high-style fabric.

It has taken time to invent the new synthetic yarns; it will take more time to use them in a purposeful way. Today puckers are a practical fabric. Tomorrow they may be attractive as well.



Nylon Puckered Fabrics by R. K. LAROS Co.

L'Art et la Mode of Paris says . . . .

Winter 1953-54 FASHION HIGHLIGHTS

Skirt lengths from 14 to 15 inches from the floor.

Dresses with uplifted waistline effects. Focus is on the short, full bust.

Princess line — both full and narrow.

Tailored jackets with clinging basque effect. The shortest jacket takes the form of a lengthened spencer.

The little black wool day dress rises again to importance.

Three-piece ensembles — short coat, jacket or bolero, and dress or skirt.

Huge-collared coats, as shown by Balenciaga. Also his magnificent coats in corduroy and white wool.

Slightly barrel skirts, or skirts with fullness drawn to the back.

A variety of fabrics, from the winter prints recalling the pelts of wild animals, to zibelline-like cloths, cashmeres, and wool and silk jersey; not to mention the flat-surfaced or *bouchonné* tweeds, and the silk, cotton and rayon velvets so much in favor. Much chiffon for evening wear, including the very new polka dots.

Colorings appear frosted. Noteworthy are marron glacé, coffee ice, brown-black, golden sand, grey-blue, and elephant. Some delicate pastels, such as rose-pink. Brilliant shades include lacquered Chinese red, electric green, church-windowpane-blue. Black and white in combination is favored for evening.

IMPORTANT DETAILS OF LINE AND DESIGN

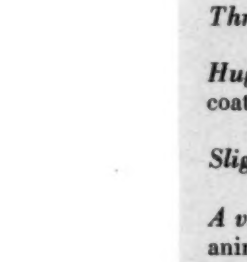
Backs show a blousy effect with gathers starting from the yoke.

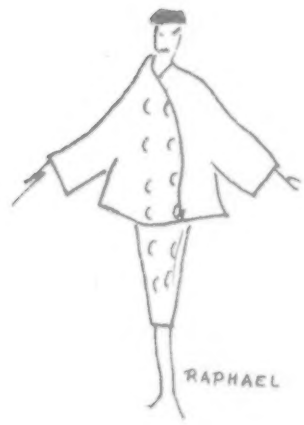
Necklines slip backwards, often stressing different lines in back and front.

Sleeves end often above the elbow in the *little* daytime dress.

Bows of every size are in fashion — from the small, neat variety to finish off a border, to the giant bow placed in front or in back, kimono-sash fashion.

Buttons are used in classical fashion from neck to hem of a dress, either in front or back.





The art of the middle ages makes us aware of a vast concept of man and of his relation with the universe. It does not isolate man, but shows him at grips with circumstance, with the misery and the glory of his existence. It does not stop at the surge of youth, unless to embody it in a memorial stone. It takes him in every age, in every condition, working at his tools, suffering with his ills. The blind figure high on Rheims Cathedral proclaims alike the justice of God and the glory of human perseverance.

To the gentleness of the Gospels, to the sublime heights of theology, this humanism carved in stone adds a power of sympathy for all that breathes, a compassion, a cordiality, a tremendous friendship. It is all embracing; it takes man as the center, and the image of God is humanity itself. Here the word acquires its full meaning.

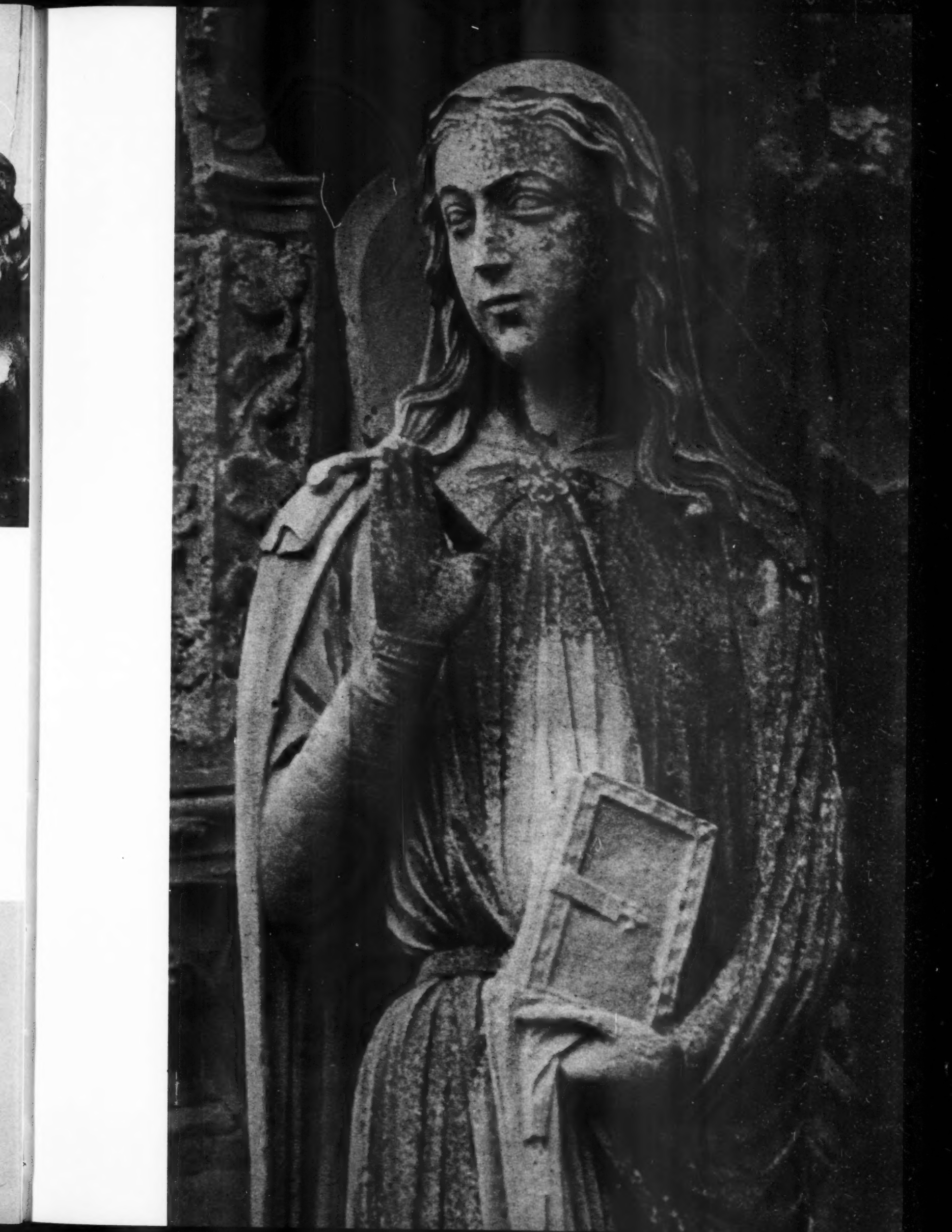
HENRI FOCILLON

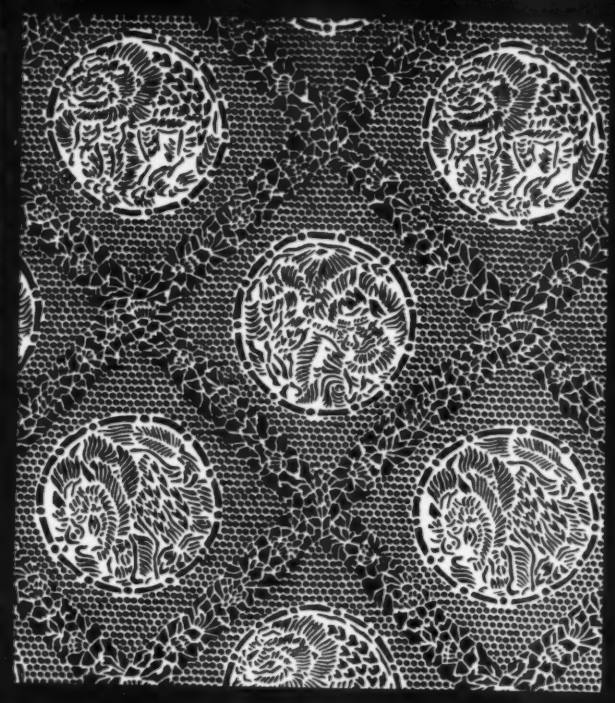
Goodness and love mold the form into their own image, and cause the joy and beauty of love to shine forth in every part of the face. When this form of love is seen, it appears ineffably beautiful, and affects with delight the inmost part of the soul . . .

SWEDENBORG

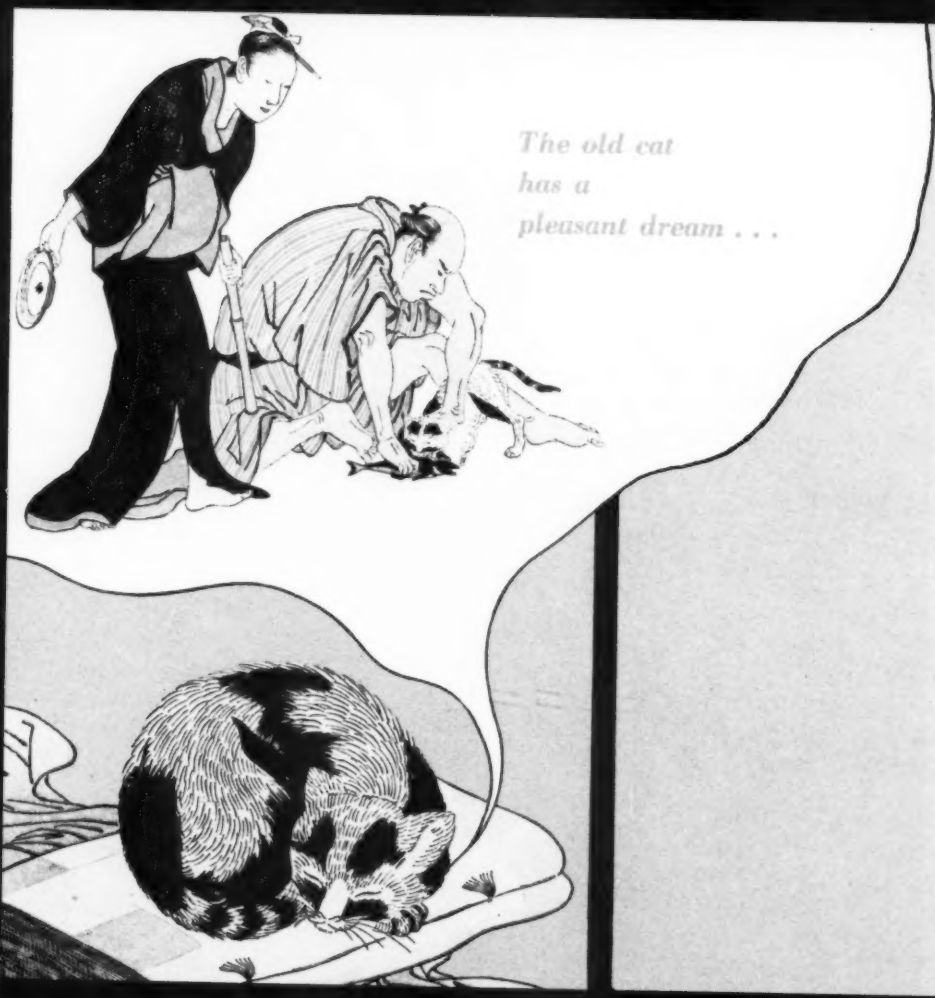
This deliverance of the soul from all useless and selfish and unquiet cares brings to it an unspeakable peace and freedom; this is true simplicity. This state of entire resignation and perpetual acquiescence produces true liberty; and this liberty brings perfect simplicity. The soul which knows no self seeking, no interested ends, is thoroughly candid; it goes straight forward without hindrance; and its peace, amid whatever troubles beset it, will be as boundless as the depths of the sea . . .

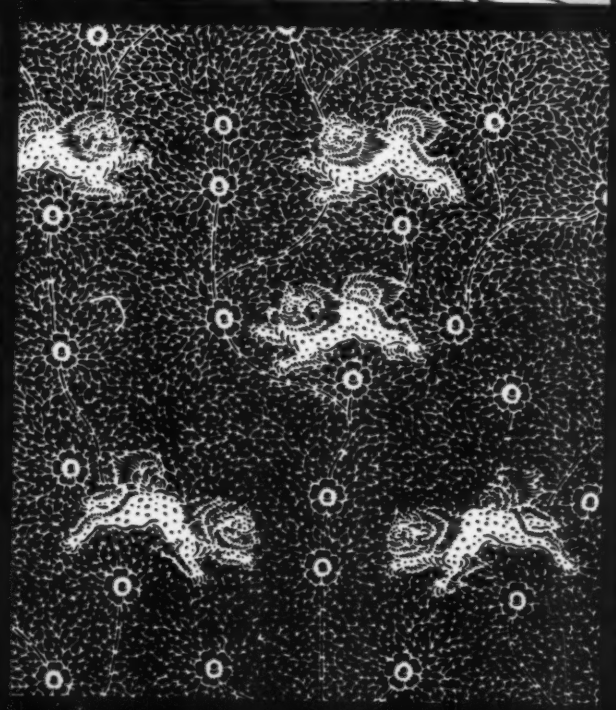
FENELON





JAPANESE DESIGNS





JAPAN'S *KIMONO PICTURE*

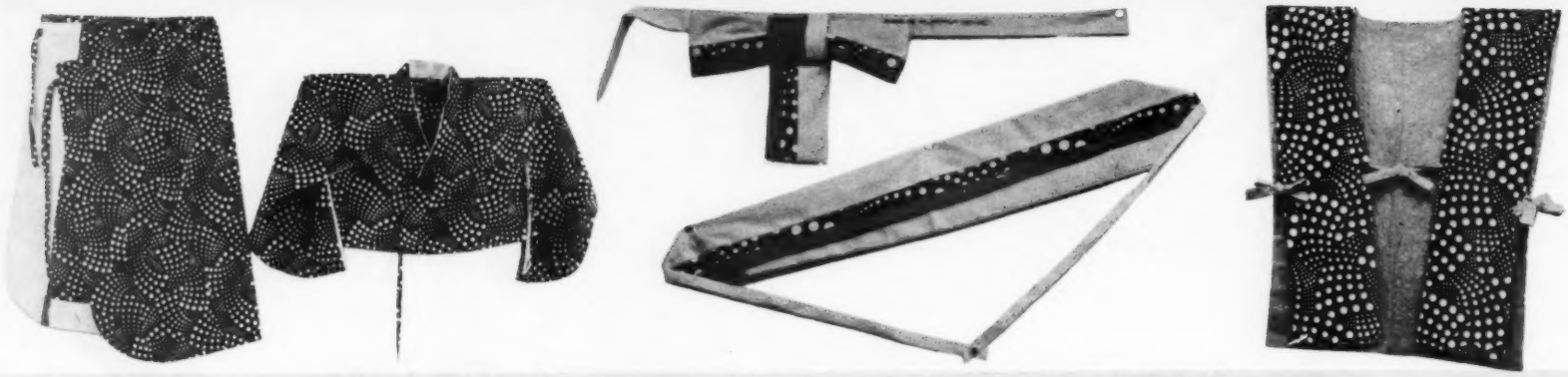
• The kimono, unchanged for centuries, is being strongly influenced by Western fabric ideas and finishes in Japan. At a recent kimono fashion show in Tokyo, sponsored by the Toaye Commercial Company with the cooperation of Takasa Dyeing and Printing Works, Daiwa Spinning Company, and Fuji Spinning Company, Japanese women flocked to see the fabric innovations enjoyed by their Western sisters. The advent of the Everglaze process, for example, has made possible kimonos which require little or no ironing, kimonos that are resistant to soil and wrinkles, and kimonos with durable, crisp freshness.

In a land where kimonos are usually either custom or home-made, women are now buying more and more ready-to-wear ones. Many women, hitherto resistant to the concept of ready-to-wear kimonos, are being lured by prices that allow for a larger wardrobe as well as by the great variety of patterns and effects offered by the Japanese department stores.

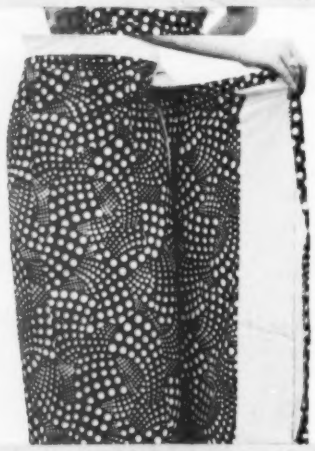
The fashion show, divided into three parts, comprised traditional kimonos (for those who would not be the first to don the new Western-flavored ones for the 1953 tempo of living), the new ready-to-wear ones and Yukatas, traditional warm weather dress in Japan, comparable to our resort lines. Most wanted fabrics were of the sculptured variety, with some embossed and pique types. Solid colors as well as small patterns predominated. All the kimonos shown on this and the following page made of Everglaze fabrics.

A design influenced by Western fashions with ruffles at plunging neckline and sleeves.

HOW TO TIE THE JAPANESE OBI



The elements of the kimono costume are shown above. From the left, are the skirt, the shirt, the obi (belt) for the back and that for front, and, at right, the coat which is optional and may be reversed.



How the skirt of the kimono is worn and fastened.

How the shirt is worn and tied at the back.

How to wear and tighten the obi and how it is tied. Below, the kimono is shown correctly worn, both without and with the coat, which is shown reversed at right.

A kimono design which adheres to the classic, fashioned with deep sleeves, upstanding collar line and deep obi elaborately tied.

All kimonos shown in EVERGLAZE *cottons.*

Another of the new styles influenced by the West, yet embodying features of traditional kimono.

. . . two of the newer ready-to-wear kimonos.

WHAT YOU SHOULD KNOW ABOUT THE FABRICS YOU MAKE, WEAR, SELL OR USE.

What do you really know about fabrics? Can you tell one from another by their look or feel? Do you read and understand what the tags and labels mean when they say pure silk . . . Sanforized cotton . . . 100% virgin wool . . . Milium . . . nylon . . . Dacron . . . Vicara . . . or a blend of . . . ?

The textile plants of today are making materials that it is difficult to recognize by look or feel, and the names themselves may mean little or nothing to you. It's important to know what you're getting, and what qualities you can expect from fabrics made of the many various fibers today. The care of clothing depends also on the answer to "What is it made of?"

This article is designed to help you in evaluating the fabrics used in your dress or work clothes . . . to tell you briefly about natural, man-made, and synthetic fibers . . . about weaves, finishes, and fabric fundamentals . . . to serve as a quick guide to what looms on the horizon in the dramatic world of textiles.

UNTIL A FEW decades ago it was easy to recognize and classify fabrics. They were made from cotton or wool or flax. There was needed no vocabulary of words like Orlon, spun rayon, Dynel.

Things are different today. Although we still have only a small number of major textile fibers, these are spun and woven into thousands of different fabrics, and treated to behave in a host of different ways.

When you are familiar with the special characteristics of the fibers, you know what will be the best use for a fabric . . . in clothing, household, or industrial use. Designers work with the type of fabric in mind when they create a coverall, a party dress, a blouse, or a suit. "What can this fabric do?" leads to the final design.

* * *

WHAT IS A FIBER? It is the fine, individual, threadlike substance from which yarn is made. The yarn is twisted to form a continuous strand used in the manufacture of textile materials. Simply, we have the fiber first; from it is made yarn; then from the yarns the fabrics are woven or knitted.

Fiber Classifications

NATURAL FIBERS from animals or vegetables or, in a few cases, minerals.

MAN-MADE FIBERS, wood chips or cotton linters transformed through the miracles of chemistry into a fabric for a dress or suit.

SYNTHETIC MAN-MADE FIBERS, scientifically created from raw materials such as air, sea water or coal.

BLENDS of the above fibers, specifically engineered to give you the combined virtues of different fibers.

THE TEXTILE FIBER KINGDOMS. Following is a tabulation of current textile fibers, both major and minor:

Animal Fibers
Alpaca
Angora goat hair
Camel hair
Cashmere
Cow hair
Extract wool
Fur
Guanaco
Hog hair
Horse hair
Huarizo
Llama
Mohair
Misti
Mungo
Noil
Persian cashmere
Rabbit hair
Reprocessed wool
Reused wool
Shoddy
Silk
Spun silk
Suri
Vicuna
Wool
Worsted
Worsted top

Vegetable Fibers
Abaca
Coir
Cotton
Flax
Hemp
Henequen
Istle
Jute
Kapok
Kenaf
Manila hemp
Pineapple
Ramie
Sisal
Straw
Sunn

Mineral Fibers
Asbestos
Glass
Metallic
Slag wool

Modified Fibers
Immunized cotton
Modified acetate fibers — Celcos, Fortisan
Mercerized cotton
Nonshrinkable wool
Rayon and acetate staple and staples made from other man-made fibers

Regenerated Cellulose Fibers
Cuprammonium rayon
Nitro-cellulose
Viscose rayon, including Fiber E

Cellulose Derivative
Acetate
Cellulose acetate
Ethyl cellulose

Protein Derivative
Alginate, from seaweed
Ardil, from peanut protein
Caslen, from casein
Lanital, from skim milk
Sarelon, from peanut protein
Vicara, from cornmeal

Synthetic Man-Made Fibers

Acrilan — copolymer of acrylonitrile with about 15% of vinyl derivatives
Dacron — polyester fiber
Dynel — copolymer of 60% vinyl chloride and about 40% acrylonitrile
Vinyon N — staple fiber of vinyl chloride and acrylonitrile
Nylon 6 or Perlon L — polyamide polymer from caprolactam
Nylon 66 or Perlon T — polyamide condensation polymer
Nylon 610 — the same as Nylon 66 but uses sebacic acid instead of adipic acid
Nylon Elastic Type — copolymer of Nylon 610
Orlon — addition polymer from acrylonitrile
Pe-ce (German) — after-chlorinated polymer from vinyl chloride
Perlon U (German) — polyurethane polymer
Polythene — addition polymer of ethylene
Saran — copolymer of vinylidene and vinyl chlorides
Teflon — tetrafluoroethylene polymer
Vinyon — vinyl copolymer of about 90% chloride and 10% acetate
X-51 — acrylic fiber

In the foregoing table, there are many fibers which will hold no interest for you since they are limited to specialized fields foreign to you. Others, however, will evoke your interest since many of them are household words, and you will wish to know all that you can about them. They will be treated briefly here.

The Sources of the Natural Fibers. Wool and silk come from animals — wool from sheep or other related animals, silk from the silkworm. Cotton and linen are vegetable fibers that grow, linen being the product of flax, which is the fiber name.

Cotton has been in domestic use on this continent for at least 4500 years. This soft fiber is strong, long wearing, comfortable; can be bleached or dyed any color; is excellent both in yarn dyes and for prints; and it can be cool or warm depending on the yarn and the weave of the fabric. Four out of every five yards of fabric made in this country are cotton. It is absorbent, so that on a hot day it will throw off the heat through evaporation. It can be spun into fuzzy yarns that act as insulation so that on a cold day it will trap and retain warmth. Cotton used to be considered a seasonal fiber, smart only in summer or tropical climates. Recently, however, with styling developments and the application of today's textile engineering, cotton has come to be regarded as a year-round fiber.

And with new finishes these days you can guarantee that cotton will not shrink perceptibly, will not fade in washing, will keep off the rain, will discourage wrinkles, will turn a cold shoulder to soil, keep a sleek, slick, shiny surface, and if you wish it to, will rustle as crisply as fallen leaves under foot.

When you buy cottons for any purpose, take a good look at the labels and tags. They'll tell you at once whether its appealing qualities are durable.

Cotton washes almost perfectly. Use moderately hot water on cotton and plenty of soap or detergent. Too high a temperature may set stains; remember that it is the suds that take out the dirt, not the heat. The old-fashioned idea of soaking cottons overnight should be avoided. Laboratory tests have shown that it takes only about twenty minutes to soak out the soil; this treatment is gentle on the color, and saves you a great deal of time.

In washing cotton, as with other fibers, you must give thought to the weave construction, and the way the garment has been made. It is not a good idea to toss an intricately cut dress into the family washing machine and expect that it will press back into perfect shape as good as new. Nor does it make sense to take a heavy cotton tweed and wash it, no matter how carefully, with your own hands. Better trust hard-to-wash or hard-to-iron garments to a dry cleaner.

Wool: The only fiber that will felt naturally comes from the fleece of the lamb or sheep, angora goat, or cashmere goat. While only wool will actually felt, according to the Wool Products Labeling Act of 1939 the term wool also covers the fibers from the camel, alpaca, llama, and vicuna. Literally speaking, of course, they are not in the strictest sense wool. Wool is warm, and the good qualities wear long and well. It is a springy, resilient fiber that sheds wrinkles naturally if they are not too deeply set. Woolen fabrics come in all weights, from a seven-ounce challis or light tropical up to a 30-ounce overcoating of the fleece type. Wool can now be treated so that shrinkage is reduced to a minor problem. Moths and other insects obtain their favorite nutriment from woolen articles, so be sure to stave off

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their attacks. Many fabrics and garments in today's market are treated for moth resistance when you buy them, but if the manufacturer has not attended to this, you should do it yourself before storing anything that is part-wool or all-wool.

You will find tags on whatever you buy in the way of woolens, telling you just what the fiber content is. These may appear a trifle confusing, and briefly here is what they mean:

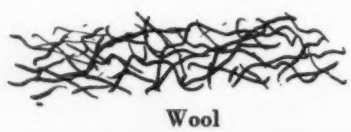
A WOOL PRODUCT is any fabric that has some wool in it.

VIRGIN WOOL is fiber that has not been used for anything before. Wool, however, varies greatly in quality and grade, and sometimes a reprocessed wool is better than one that is labeled "virgin wool." Good woolens have springiness in the hand, and wrinkles disappear quickly after you have crushed a woolen fabric in your hand.

The term WOOLEN or WORSTED identifies the kind of yarn used to make the fabric. Woolen yarn is bulky, loose and unevenly twisted, made of uneven, fuzzy fibers. It is woven usually into heavy, rather bulky cloths on the order of homespun, tweed, cheviot, shetland, and herringbone. All these materials wear well, do not shine and can withstand good rough-and-ready usage. Because of the woven texture of most woolens, they will not hold a crease too well, and have a tendency to sag at the stretch points like elbows, knees and seat.

Worsted yarn is made of the better wool fibers that have received a thorough combing so that all fibers are parallel and free of foreign matter and the undesirable short fibers called noil. The fibers, of 1½ inches up to six inches, lie uniformly and evenly at all times so that a smooth, evenly-twisted, strong yarn results. This formation and the high number of turns per inch in worsted yarn make it much stronger than a woolen yarn. This yarn is ideal for serge, gabardine, tricotine, crepe and top quality knitted jersey, all of them fabrics with a clean, smooth, unfuzzy surface effect. Worsteds hold the crease very well, are light, supple and longer wearing than woolens. In time, however, friction caused by wear will cause them to shine.

Unfinished worsted has a soft nap, the only type of worsted fabric that is given a napping treatment. Garments made from it are soft and downy to the touch, and they will not shine even after long wear. It is woven into all sorts of patterns — fine stripes, checks, plaids, and novelty effects.



Wool

Worsted

REPROCESSED WOOL means that the fiber or yarn was woven, possibly felted, into some form of fabric; then, without being used for any purpose, was returned to the fibrous state by the garnetting machine. Tailor's clippings form the bulk of reprocessed stock.

REUSED WOOL refers to the stock obtained from fabrics or garments that have been worn. These are processed in the garnetting machine. A coat, trousers, sweater, anything in fact, is fed into the machine, and whatever goes in becomes a mass of fluffy fibers ready for re-manipulation into yarn and fabric. Do not forget that wool has many grades, and a re-used good stock may be as good as a poor grade of new wool.

The following tabulation shows briefly the relative properties and characteristics of woolen and worsted in yarn and fabric:

YARNS

WOOLEN:	WORSTED:
A. Carded only	A. Carded and Combed
B. Soft, rather slubby	B. Substantial, harder than wool
C. Fuzzy, uneven fibers	C. Smooth, even fibers
D. Weaker	D. Stronger
E. Fibers in conglomerate mass	E. Fibers are parallel
F. Uneven twisting	F. Even twisting and greater twist
G. Rather bulky type of yarn	G. Uniform in diameter

FABRICS

WOOLEN:	WORSTED:
A. Lower texture	A. Higher texture
B. Less shine	B. More shine; will develop shine in time
C. Tendency to sag and not hold the crease	C. Will not sag, and holds a very good crease
D. Less tensile strength	D. Greater tensile strength
E. Lower quality yarn	E. Better quality yarn
F. Does not tailor as well	F. Will tailor more easily
G. Gives good wear for long service	G. Will last longer than wool cloth and gives better service
H. Less expensive fabric	H. More expensive fabric

Wool is often blended with other fibers, such as silk, and with man-made or synthetic fibers such as acetate, rayon, Orlon, dynel, vicara, nylon, Dacron. These blended fabrics will show some particular highpoint such as crease-retention, bulkiness with light weight, resistance to abrasion, and so on. Blends are increasingly accepted in men's and women's wear suitings, dress-goods, and sports clothes.

If you take good care of woolens and worsteds they last a long time. Keep them brushed; never put them away soiled; wear shields, if need be, to protect against perspiration stains. Don't wear the same suit every day. By giving garments a chance to hang they'll wear better, look better, and last much longer.

Will wool wash? If in doubt, do not take a chance; have the garment dry cleaned. For your woolens that are washable, use lukewarm water, never hot, with plenty of suds; rinse thoroughly; dry away from the heat. Some woolens (look carefully at the label) are set by special processes so there's little danger of shrinkage, and blocking is unnecessary. After washing, roll the garment in a towel, put it into shape while still damp, and allow it to dry flat. For pressing, use a moderately hot iron and damp cloth, or a steam iron, on the wrong side when possible.

SILK has the soft feel of luxury, but is stronger than most think. It wears well, resists wrinkling, does not absorb dirt, is difficult to tear, is often easy to wash and launder (again, take a look at the label, and respect a *dry clean only* sign to the letter). Be careful of perspiration which will rot silk if left too long. Perspiration may also discolor the fabric.

As with other fabrics, there are many different qualities in silk. The best and the most expensive is marked *pure silk*. This

means that the fabric has not been treated with tin or iron salts which are added to replace the weight lost in processing. *Pure dye silk* is next in quality. At present, there is a Federal Trade Commission ruling that this term may not be used on silks that have been weighted more than ten percent on colored, or fifteen percent on black silk fabrics. If the silk is weighted more than this, the fabric will have the tendency to crack or split.

Spun silk is made from various short wastes in silk manipulation; it is not filament silk. Though it costs less, spun yarn is durable and gives a smart appearance to the garment. Sometimes, you'll find spun silk in tweeds, or mixed with wool or cotton for novelty fabrics. It has a homespun charm all its own, plus the basic silken virtues.

LINEN: It is a known fact that linen has been an established source of industry for over 4,000 years. The Egyptians knew how to manipulate it to perfection. That it lasts for centuries is shown by extant wrappings on mummies. It will last well today, too, because the fiber is such that boiling water, bleaching sun, and hard wear will not cause it to deteriorate.

Linen is not low-priced because so much care is required in growing, processing, dyeing, bleaching or printing the flax fiber. It will shrink unless properly processed and the fabric will crush unless it has been treated for wrinkle-resistance. But it is hard to equal the clean, fresh look of linen with its natural luster. A light linen dress, a handkerchief, or a tailored linen suit or slacks always look right and have summer-after-summer appeal.

Linen washes beautifully, can stand fairly hot water, though it is not necessary to boil the clothes to get them clean. It is easier to iron when quite damp, with an iron about as hot as for cotton. If you want to press a dry linen dress, use a damp pressing cloth on the wrong side, otherwise you may find that the material will glaze temporarily, though the sheen or shine will come out in the next washing. Linen suits should go to the cleaner because to press a linen suit well is extremely difficult.

THE REGENERATED CELLULOSE FIBERS: Acetate and rayon are made by man from natural raw materials like cotton linters, or wood chips of selected spruce, pine or hemlock. Though both acetate and rayon have the same base material, the chemicals turn these chips or linters into lustrous fibers that are different, and the results cause them to show different qualities. Rayon is called a regenerated fiber since we begin with a solid form of cellulose, change it chemically into a viscous liquid and then bring it back to solid form as filaments from which yarn can be spun. Acetate is, chemically speaking, a cellulose derivative since the cellulose acetate is derived from raw cellulose material.

ACETATE: This fiber drapes exceptionally well, has a soft, pleasing hand subtle to the touch, and a silk-like beauty in many respects. Although a great deal of acetate is used in all-acetate fabrics, it is superb for blending with rayon, wool, nylon, as well as with practically any other major textile fiber. It is not as absorbent as rayon, but it dries faster. Moths would starve to death if they had to rely on acetate for their nutriment. Mildew and mold have little or no effect on it; and it stands up well to salt air or sea water. Some colors may change color or shade because of gas fading, but this occurs rarely and only in individual areas. New developments, however, such as improved dyes, and dope-dyed acetate fibers — in which the dye has been dissolved in the fiber — offset this condition.

Check labels on blouses and dresses to see if they are washable. If they are, use lukewarm water, quick suds and then rinse carefully. Press with an iron at the lowest setting while the garment is still damp. Too much heat when you press will cause the material to creep under the iron or fuse into holes. Acetates are easily dry cleaned.

RAYON: In a little over 40 years, rayon has become a versatile fiber with strength and durability. It can be used all the way from heavy duty automobile tires, conveyor belts and typewriter ribbons to elegant clothes for women, well styled suits and coats for men. Fabrics of rayon can be cool or warm, depending upon the yarn and the weave formation. It can be made into shimmering satin, sheer chiffon, or suiting fabrics. Rayon will dye to any color, cast, shade, tone or hue, it drapes well and is an excellent blender with other fibers. By suitable treatments it may be made crease-resistant, spot-resistant and water-repellent.

Rayon may be dry cleaned or laundered. Some rayons launder well, in which case the label usually says *washable* or *hand-washable*. Always use lukewarm water with mild soap or detergent suds. Press lightly with your iron set at lowest setting.

SPUN ACETATE and SPUN RAYON: To make these yarns, suitable for certain types of fabrics, as the filaments are extruded from the spinning box, they are cut into short lengths from about one to about nine inches, and then crimped. They are cut to the same staple length as the fibers with which they are to be used, if for blending, or they can be used alone, as desired.

The staple stock is spun into yarns known as spun acetate or spun rayon. While spinning alone or with other fibers, careful manipulation must be carried out in order to obtain the effect desired. While spun acetate or spun rayon are lower in cost than many other fibers, their wide-spread use is dependent on the desirable qualities that they impart to fabric. Spuns give good-to-excellent wear, keep their shape and can be dry cleaned or washed. But check the label to be sure of what the material is supposed to do for you.

THE SYNTHETICALLY MAN-MADE FIBERS: Only a few short years ago these were called the fibers of tomorrow! Now they are the *fiber of today;* they've arrived and are here to stay. They are not, however, miracle fibers in any sense of the word; all have their particular characteristics, properties, and uses, and each in its way serves the pattern of today's living. Out of these chemical developments comes clothing that washes speedily, dries while you look at it, needs little ironing or pressing, repels moths, is not receptive to mildew, won't wrinkle or stain easily, and will keep you warm or cool. Many of the *testube* fabrics are just past the experimental stages, and only a comparatively small supply is available for appraisal and approval. Great increases in supply, however, are under way, and in a year or two all but the newer should be more widely available.

In buying any garment again study the label. This gives the fiber content of the garment, and will tell you how to handle it in wear and cleaning. Synthetics may closely resemble wool or cotton or linen, and yet your garment may require very different treatment from garments made of these natural fibers.

NYLON: The oldest child in the synthetic family is now fourteen years old, having been born in 1939, and has reached considerable stature since its beginnings. It goes into nearly invisible stockings and sheer dressgoods, into heavy robes, laundry and cargo nets, auto upholstery. It's woven in fabrics that look like fine linen, and is used for velvet, lace, fishing lines, carpets. You can have an almost complete wardrobe of nylon. Men's shirts of nylon have done much for the traveling man, and for women whose nylon blouses need no ironing if they are drip-dried.

Nylon is much stronger than any natural fiber, resists abra-

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sion, is very elastic but seems to have a good memory since it will spring back into shape after stretching. It will not burn, but will melt, so use a low iron setting at all times. Use comfortably warm water and suds for laundering. Nylon also dry-cleans well.

When you buy anything made of nylon be sure that the sewing thread is also of nylon because cotton or silk threads can shrink and pucker the garment when it is cleaned.

Nylon is often blended with other fibers to afford strength and greater resistance to abrasion, to help fabrics hold their shape and, with wool, to give a lighter weight with increased strength.

ORLON: This is the trademark for Du Pont's acrylic fiber. It is very durable, soft and warm, and is resistant to mold, mildew and insects. One of its outstanding features is its ability to withstand deterioration by sunlight or gaseous elements in the air. Its property of giving bulk without weight is noteworthy. Like other synthetic fibers, it is easy to wash at moderate temperature and allows little or no shrinkage. It holds its shape through innumerable washings so that it needs little pressing. You'll find it in dresses, blouses, sportswear, and raincoats — sometimes alone, sometimes blended with other fibers.

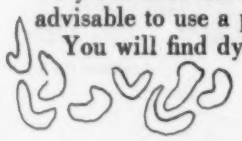
Orlon closely resembles woolen and worsted goods in suits, overcoats, knitted sweaters or blouses. However, it doesn't sag, and after hard wear, wrinkles will hang out easily. It is necessary to sound a warning: Orlon will melt under high heat, so be careful with the iron . . . and use the lowest setting or you may be in trouble. Naturally, it dry cleans exceptionally well.

DACRON: (pronounced *day-cron*) is Du Pont's polyester fiber. It drapes very well, has high stretch-resistance, and either alone or in blends makes fine fabrics for men's and women's suits. A fabric properly made of Dacron will give excellent service and will shed wrinkles easily; its highpoint is its crease retention even in damp, humid weather.

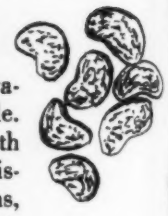
One noted manufacturer is said to have had a man wear an all-Dacron suit for over two months without cleaning or pressing, and it still looked presentable. Fungus, moths, mold, and mildew are foreign to Dacron; because of its non-absorbency spots are removed with ease. Socks, sweaters and knit goods made of Dacron yarns are warm, keep shape, wash easily and do not mat even after rugged wear.

A suit of Dacron can be washed in a washing machine with warm water and it will dry quickly. Shrinkage is negligible. Dacron melts at high heat, so use the lowest setting if pressing is needed. This fiber is currently employed especially in men's and women's suits, slacks, men's socks, shirts, and women's blouses and it is making progress in dresses, sportswear, knitted wear, and work clothes.

DYNEL: This soft but highly resistant fiber is a product of Union Carbide and Carbon Corporation. It is warm, light and appealing. It is self-extinguishing when ignited, is moth- and mildew-resistant, it is highly resistant to chemicals, and it can not only be washed and dry cleaned, but in work clothes and filters it can even be treated with acids for special purposes, without injuring its appearance or strength. It is excellent in blankets and children's clothing blends. Dynel is a quick dryer. Very low heat must be used for pressing dynel fabrics, and it is advisable to use a presscloth over the fabric when ironing.



You will find dynel more and more in sweaters, socks, work clothes, suits, fleece coats, jerseys and sportswear, and it is especially favored in decorative hangings and blankets.



ACRILAN is the acrylic fiber made by the Chemstrand Corporation and it is only now entering the market on the widest scale. It will in the near future be found increasingly in blends with the natural and man-made fibers. It is warm, soft, weather-resistant. Acrilan wears well, has no appeal or allure for moths, shrinks very little, and holds promise that it will prove acceptable in many types of apparel. It launders, dries, and can be dry cleaned easily. Use lowest setting when ironing.

VICARA: The zein fiber of the Virginia Carolina Chemical Corporation. It looks and feels like cashmere and gives a fabric a fine, soft hand. Vicara is easy to weave and blends splendidly and it dyes to enticing colors. It is in favor for knit goods and in suitings, dresses, topcoatings and slacks; it is used blended with acetate, viscose, nylon or wool. Since its shrink-resistance property is good, it helps materials to hold their shape. Although made from corn, insects do not relish it and mildew has no effect on it.

Since Vicara is principally used in blends, for directions as to washing and ironing consult the label.

A FEW WORDS ON BLENDS: The blending of fibers in a textile engineering technique gives to fabrics special functional or styling or wearing quality. Sometimes the blending lowers the cost, sometimes it raises it, but a blended fabric should not be considered to be inferior. The fibers are blended scientifically for a definite purpose . . . to increase wear, to minimize shrinkage, to resist soil, to add beauty at lower cost. A man-made fiber may be blended with wool to give a lighter weight material that can be more crease resistant, less apt to sag. A synthetic fiber may be used to impart durability and a soft, warm *hand* to an inexpensive grade of wool. Cotton may be combined with nylon to make a satin-weave stripe on a mist-like gauze that is however nearly as strong as steel.

THE FABRIC WEAVES: The chief selling points of a material are weight, finish or surface effect, color and weave. Some cloths sell on their weight, others on the finish or on color, and a great many because of the suitability of the weave to the prospective use. In 1747, a book appeared in Berlin which contained every weave that is used at the present time. In the last two hundred years, with one or two exceptions, such as terry cloth and chenille rug weaving, not a single new weave has appeared on the market. Of course, some of the basic or simple constructions have been given various appealing names to attract the buyer. All weaves are derivatives of the three basic weaves — plain, twill, and satin. Practically any weave is a determining factor in the appearance, the coolness or warmth, and in the wearability of the goods. Weave textures may be loose, medium or high in construction according to the number of the ends or warp threads, and the picks or filling threads per inch.

Plain Weave: Comparable with darning, a set of threads go in one direction while a second set goes one over and one under, then returns in one under and one over to give a simple checkerboard effect. The plain is the simplest of all weaves and is strong and durable. Eighty percent of all woven goods are made of plain weave. By the use of different colors and weights of yarn in the same fabric, a great many pleasing effects may be obtained. The following cloths are made of plain weave, or in simple variations of this weave: homespun, taffeta, chambray, broadcloth, gingham, madras, shantung, organdy, voile, oxford.

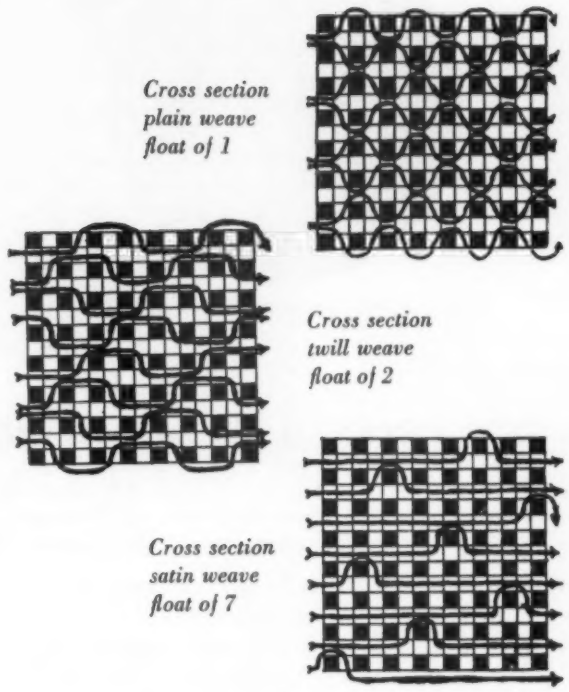
Twill Weaves: A great many intricate and appealing fabrics use this construction: herringbone, serge, tricotine, tweed, gabardine, denim, covert, whipcord, cavalry twill, and so on. The diagonal line on the face of the goods may run to the right, to the left, or in both directions as in a broken twill weave used to make herringbone. A 45-degree twill is the most common weave used, but steep twills with angles of 63 degrees, 70 degrees, and 75 degrees are popular. In the low angle twills, called *reclining*, the angles are 27 degrees, 20 degrees, and 15 degrees.

Most twills are of the right-hand type in which the twill line runs from the lower left-hand corner of the goods to the upper right-hand corner of the material. A left-hand twill, such as used in denim, and some gabardine, will show the twill line running from the upper left-hand corner of the material to the lower right-hand corner of the goods.

The twill weave makes a very durable cloth, and one that will withstand friction, chafing, and abrasion very well.

Satin Weaves: These give a polished or molten look to the fabric. This, the third basic weave, is an offshoot of the twill. It does have a fine twill line in the fabric but it is usually so fine that the naked eye does not observe this in the cloth. The yarns used seem to obliterate the actual twill construction that is present. The smallest satin that can be made repeats on five threads. In the construction, a warp thread interlaces with a filling thread and then floats on the face or the back of the material for four threads. An invisible twill would be formed by the manner of interlacing of the threads in the full repeat of the yarns. This weave, which has outstanding texture, is the weakest of the basic weaves in abrasion resistance and wear.

Many acetates, rayons and silks are made with satin weaves to produce luxury fabrics of great appeal. Incidentally, the fabrics such as damask, brocade and brocatelle use the satin weave to produce the bright-against-dim effects observed in them. Table damask is another material to which the satin weave adds attention and interest.



Bleaching is the whitening of a fabric or fibers by the use of chemicals to remove the natural grey tint.

Calendering means that woven cloth has been pressed between two or more rollers, under heavy pressures, to smooth, polish and dress up the surface.

Mercerizing is the process that gives cottons that silken-like luster and increased strength.

Napping produces a soft fuzz on the face of the goods. It is done by passing a fine comb of steel wires or teasel needles over the goods.

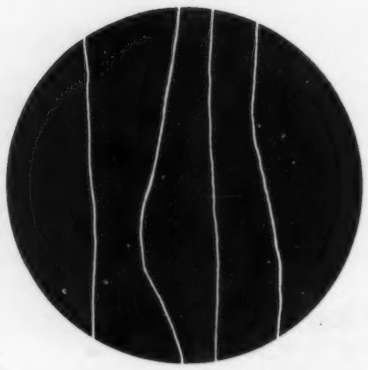
Pre-shrinking insures a material against loss of length or width when you wash it or have it cleaned. Always look at the label carefully to see how much you may expect the goods to shrink.

Sizing means that a cloth has been treated with starch, wax, glue, gelatin, gum or clay to afford stiffness, strength, or weight.

Waterproofing means that the material has been treated so that moisture cannot go through it.

Fabric Finishes: The *finish* of a fabric implies the treatment that gives it some special appeal. There are finishes for abrasion resistance, absorbency, antiseptic and antistatic finishes, colorfastness, crease resistance and crease retention, crispness, dry cleanability, drapability, durability, flame resistance; to improve the hand to inhibit gas fading; for lightfastness, lintlessness; to improve the luster or glaze; mercerized for moth-, mildew-, odor-, perspiration-, shrinkage-, spot- and stain-resistance; for control of stretching and sagging; for washfastness; to make fabrics waterproof, and for numerous other purposes. A few of the major finishes include the following:

There is a host of finishes on the market. The eight major fibers could have the choice of close to 1,000 finishes applied to them, and there are about 350 types of finishes on the market. The regulations, however, that cover fabric labeling are strict, so you can feel safe in accepting the facts as stated on labels for colorfastness, crease resistance, dry cleanability, flame retardance, perspiration resistance, spot and stain repellency, and so on. By saving any tag that is attached to a garment or other merchandise you have proof if trouble arises that it should not have faded, shrunk, or burned. END



Micro-shadowgraph of Vicara Staple

A NEW CRIMPED VICARA STAPLE

Important development in the manufacture of the newest of the protein fibers gives promise of finer, stronger and fleecier fabrics.

DURING THE FOUR YEARS that Vicara has been in commercial production, its makers, the Virginia Carolina Chemical Corporation, have spent lavishly both time and resources in order to achieve a curl in the fiber simulating that of wool, and to overcome the inherent straightness of the fiber with a permanent set.

When an individual Vicara fiber, which has been wrinkled in processing, is stretched and let go, it will straighten out and remain straight. This characteristic causes a weak yarn when spun on the staple system. The reason is that there is no solid interlock among the individual fibers, and their smooth surfaces do not create sufficient inner friction to give tensile strength of a desired degree.

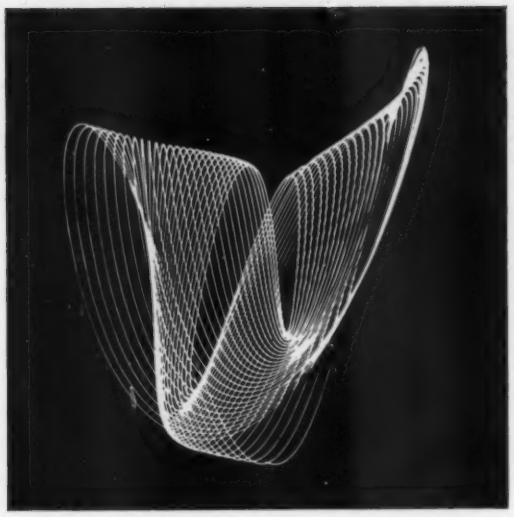
Laboratory research has proved that with a suitable crimp the strength of the yarn is increased at least 25 percent without effecting any other change in the composition of the fiber itself. Other major advantages of a crimped fiber are:

It is easier to process on conventional equipment.
The yarns possess more loft, which results in a finished fabric with more bulk for the same weight.
When processed on the Pacific converter the tow keeps under tension and fibers do not flare out.

Now the Virginia Carolina Corporation is able to report that a satisfactory permanent crimp has been developed, accomplished by means of a molecular rearrangement in the finished fiber, and that production of a crimped fiber which possesses all the above advantages has reached the commercial stage.

Micro-shadowgraph of Vicara Crimped Staple

CRIMPED VICARA STAPLE



AMERICAN FABRICS

presents a special section

American Industrial Materials

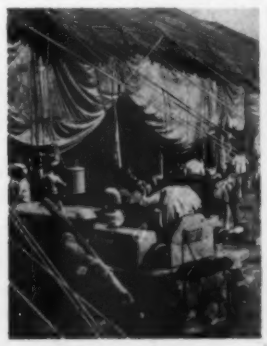
for the presentation of facts and

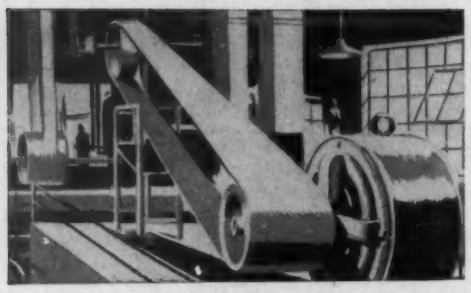
the dissemination of ideas about the fabrics

of American Industry, Agriculture, and Defense . . .

with special emphasis on the development of

new fibers, fabrics and finishes for new uses.





Strong Wellington Sears heavy-duty ducks are widely used to reinforce industrial rubber-and-fabric power transmission belts. Rubberized layers of belting duck are vulcanized together.

Continuous operation of these durable, quick drying back greys used in textile printing is made possible by a specially developed Wellington Sears nylon fabric.

Surgical adhesive tape is a typical end use of Wellington Sears "Columbus" sheeting. This fabric is well-known because of its strength, uniform quality and easy impregnability.

Industrial fabrics with a

Fashion Feeling

The synthetic resin developments that have spurred expansion of plastic coatings have presented special challenges to industrial fabrics. Wellington Sears has responded to the increasing call for backings for vinyl-coated and simulated-leather upholsteries with an abundance of new fabric constructions. Whether backing sateens for auto upholstery, new rayon fabrics with superior texture, or flexible non-woven fabrics, these constructions are specifically designed for a fashion market.

If you have worked with Wellington Sears, you know that engineering fabrics for *end-use* is our standard practice. And that our accumulated experience of over 100 years can produce very modern and economical answers to your fabric problems—whatever their nature.

For your free copy of "Modern Textiles for Industry"— 24 pages of facts on fabric development and application — write Wellington Sears Co., Dept. X.

Wellington Sears

A SUBSIDIARY OF WEST POINT MANUFACTURING COMPANY

FIRST In Fabrics For Industry

WELLINGTON SEARS COMPANY, 65 WORTH STREET, NEW YORK 13, N. Y.

OFFICES IN: ATLANTA • BOSTON • CHICAGO • DETROIT
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For These and Other Industries

Rubber	Abrasive	Petroleum
Automotive	Chemical	Mining
Fabric Coating	Food Processing	Ceramics
Plastics	Sugar Refining	Farm Machinery

Canvas Products Laundry

Wellington Sears Offers Many Varieties of These Fabrics

Cotton Duck	Chafer Fabrics
Drills, Twills and Sateens	Synthetic Fabrics
Automobile Headlining	Airplane & Balloon Cloth
Industrial & Laundry Sheeting	Fine Combed Fabrics

Bonded (Non Woven) Fabrics

THESE dramatic Conmar advertisements in **LIFE** are opening the eyes of retailers, manufacturers and consumers to the importance of quality in zippers.

Man deciding whether to let you get stuck in a zipper jam

... OR WHETHER TO PAY A PENNY OR TWO MORE FOR A CONMAR ZIPPER

This man is a dress manufacturer. He is facing one of the dozens of tough little decisions that plague conscientious manufacturers every day. Only one of the zippers he is holding is a Conmar. The other is a "nameless" brand that costs a few pennies less. He is asking himself, "Do I *have* to use Conmar zippers?"

Why does this manufacturer have to pay more for Conmar zippers? Well, why does a fine watch cost more than a kitchen alarm clock? Or sterling more than silver plate? *Quality* is an over-worked word. But when a zipper breaks down it's usually because quality has been *overlooked* in favor of a few cents saved. And some well-meaning manufacturer—like the one in the picture—has decided to risk a cheaper zipper.

Zipper failures can be infuriating. And in a recent survey among hundreds of men and women, seventy-seven percent of them (yes, seventy-seven out of every hundred) said something like: "*My children are always having zipper problems*" or "*I seem to have trouble with zippers when I am most in a hurry.*"

If you want to end zipper problems in *your* life, there are two things you can do.

One, if a zipper misbehaves don't suffer in silence. Tell your retailer. He *wants* to know—so he can tell the manufacturer.

And two, next time you buy a zippered article take an extra second to look at the name on the zipper pull-tab—just as you look for deep hems and generous inside seams. Every Conmar zipper *says* CONMAR. It's that easy! Conmar Products Corp., Newark, N. J.

MAJOR SOURCE OF SUPPLY

OF INDUSTRIAL FABRICS FOR INDUSTRY

ROBBINS SERVES
KEY CORPORATIONS
IN THESE INDUSTRIES

AUTOMOTIVE
SHOES
ABRASIVES
LAUNDRY NET
CHEMICAL
UPHOLSTERY
LUGGAGE
RUBBER COATED FABRIC
AND OTHER
HEAVY SERVICE INDUSTRIES

You can depend on Robbins Mills:

★ Quality Control. Fabrics are properly engineered for their end use.

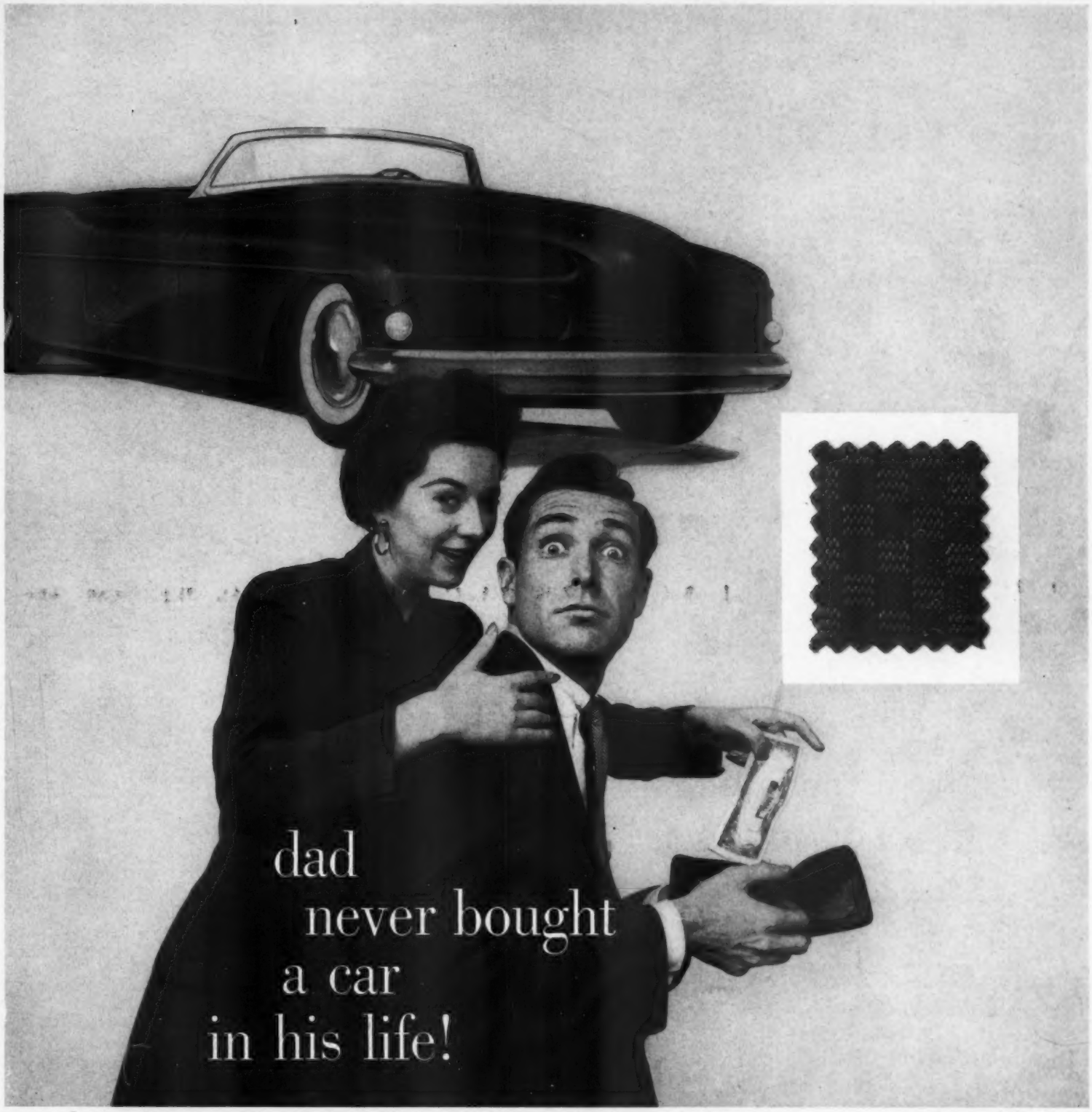
★ Integrated Operation. Robbins spins, weaves, dyes, finishes its fabrics. Constant control is maintained over each segment of the production operation.

★ Continuity of Supply. Robbins five modern plants and the most highly developed production techniques assure uninterrupted delivery schedules.

Address Inquiries to: INDUSTRIAL FABRICS DIVISION

ROBBINS MILLS, INC.

1407 BROADWAY, NEW YORK 18, N.Y.



Sure, he went through the motions. He asked all the right questions, and probably even was allowed to sign the check. But when he was all done discussing automatic transmissions, miles per gallon and power brakes, Mom probably said, "I like the grey one with the cute blue upholstery"—and that's what they drove off in.

No prospective purchaser has to be convinced that what's under the hood is very much okay. That's true of every car made today. Beyond that, and primarily, it's eye appeal . . . color, line, texture, both inside and out. That's why Mom is so easily sold on today's cars—and Burlington's automotive upholstery fabrics.

Burlington fabrics not only mean good looks, but utility as well—for Burlington's rigid quality testing and control assure long wear, guarantee fabrics that will live up to the luxury of their looks. Like Detroit, Burlington likes to please Mom—and knows how.

Burlington Mills Bur-Mil QUALITY

"Woven into the Life of America"

INDUSTRIAL FABRICS DIVISION • 350 FIFTH AVENUE, NEW YORK 1, N. Y.

AUTOMOTIVE REPRESENTATIVES
GEHRINGER & FORSYTH
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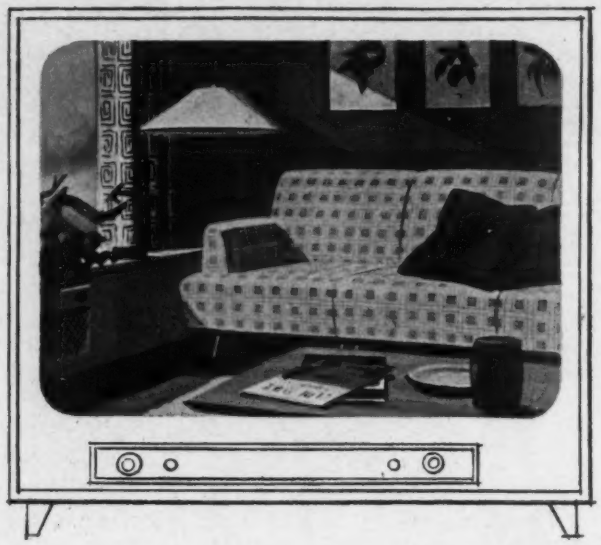
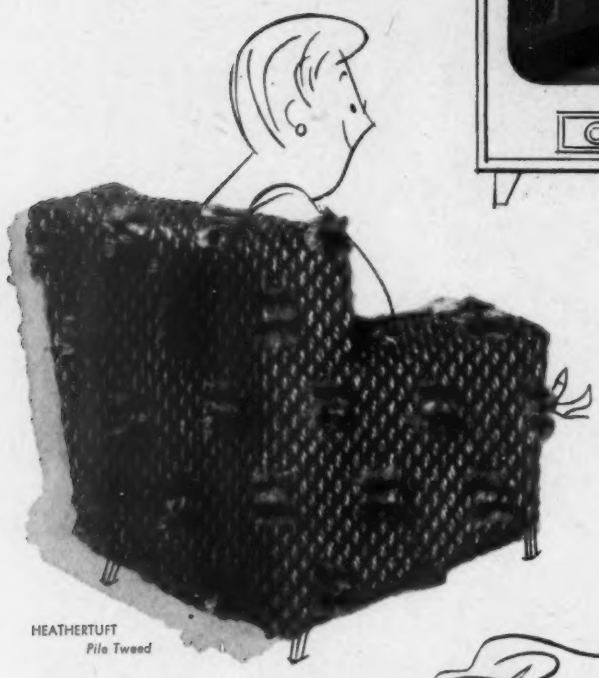
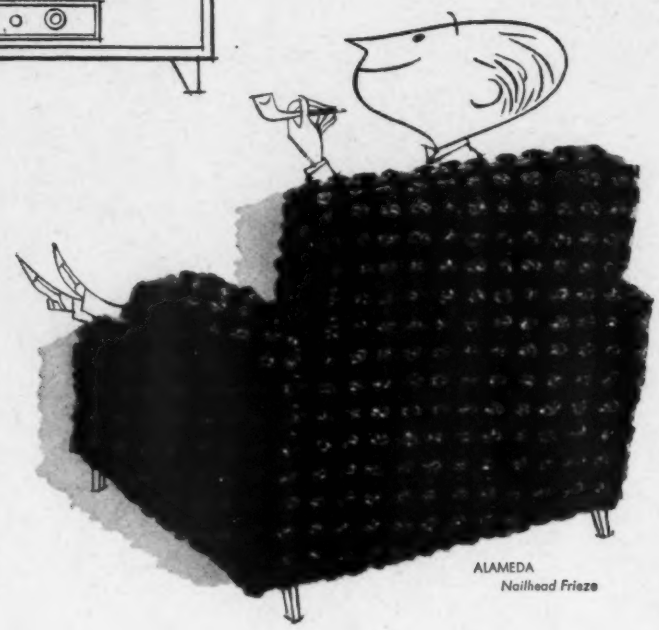




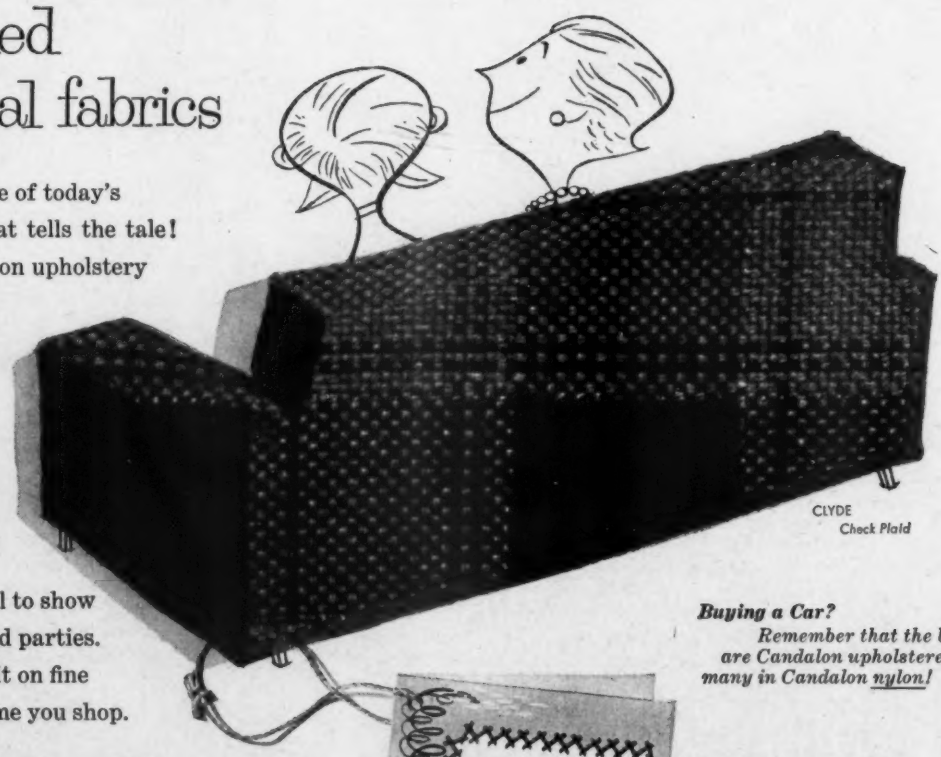
HEATHERTUFT
Pile Tweed



ALAMEDA
Nailhead Frieze

Smart homes are tuned to bright informal fabrics

There's an inviting ranch-house casualness about some of today's smartest upholstered furniture—and it's texture that tells the tale! Easy elegance is imparted by a new group of Candalon upholstery fabrics, with exceptional tweed-like textures. They're loomed in fascinating three-dimensional surfaces, with the finest of yarns. They offer pleasing tone-on-tone effects in upholstery's newest and most fashionable colors of charcoal, persimmon, pumpkin, moss green, flame, brown and toast. And Candalon fabrics generously contribute to carefree living with their resistance to soil—their easy cleansability—their stubborn refusal to show wear under the onslaughts of youngsters, pets and parties. Candalon is as sturdy as it's fashionable. You'll find it on fine but affordable furniture—so keep it in mind next time you shop.



CLYDE
Check Plaid

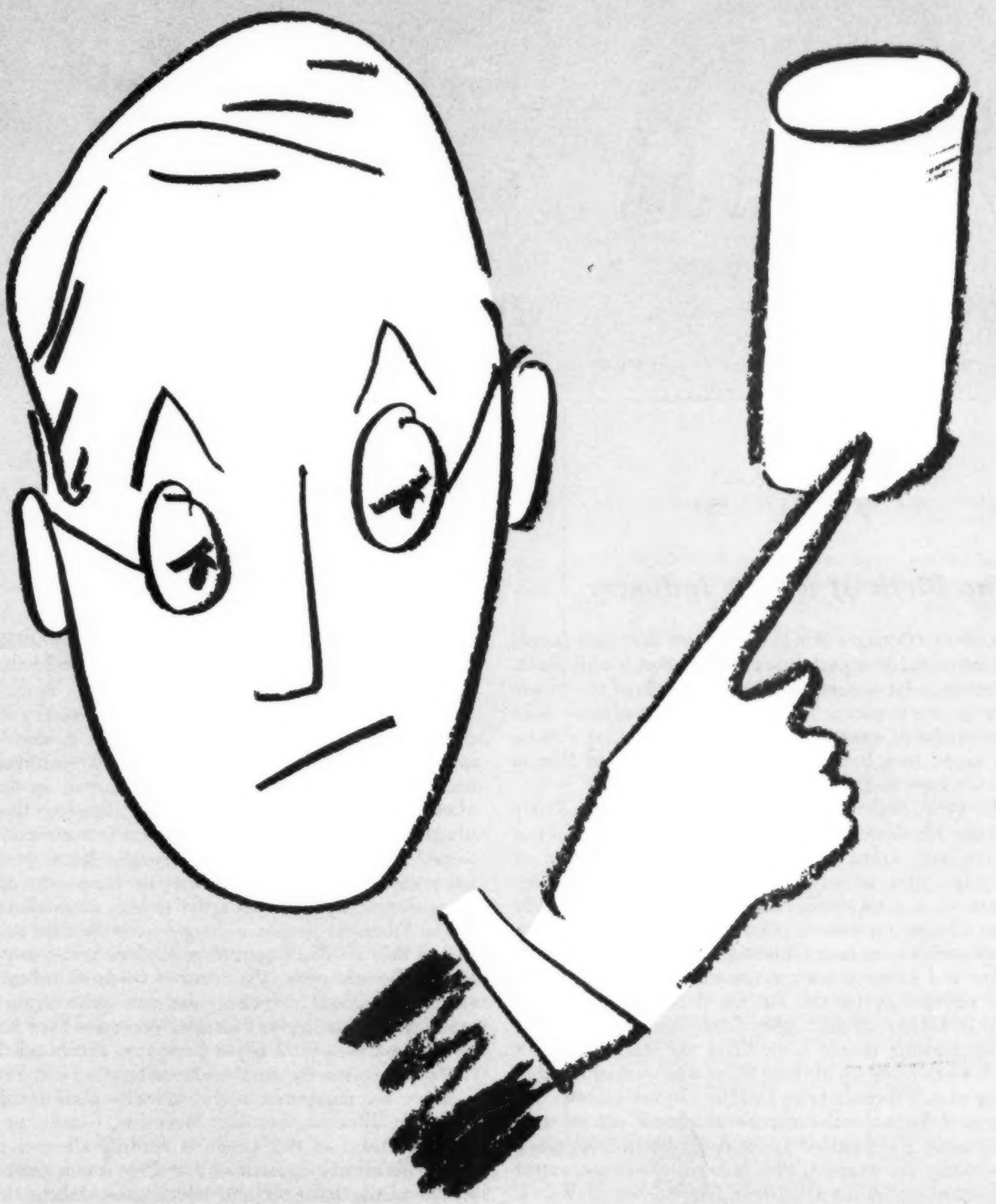
Buying a Car?
Remember that the best are Candalon upholstered—many in Candalon nylon!

This tag on furniture guarantees you the finest of upholstery fabrics—in all the finest of man-made and natural fibers.

Collins & Aikman
NEW YORK 16, N.Y., AND IN CANADA, FARNHAM, QUEBEC
America's Largest Weavers of Fine Upholstery Fabrics

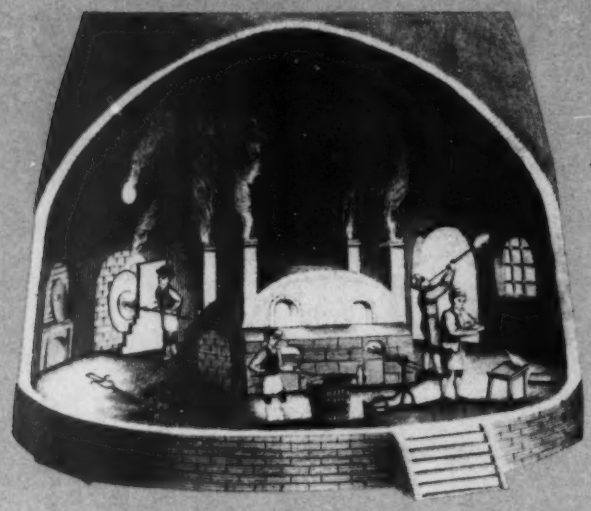
Candalon—© Collins & Aikman Corporation, New York, N. Y.

YOU MEAN YOU ACTUALLY MAKE A PIECE OF CLOTH OUT OF GLASS?...



Don't blame the gentleman in the picture . . .

Glass is just about the last substance you'd select to make some of the world's most useful fabrics. To understand glass fabrics, you must divest yourself of all your old ideas on the subject. You can't look through Fiberglas and you can't smash it. A strand of Fiberglas is no more like plate glass or bottle glass than the steel E string of Kreisler's Stradivarius is like armor plate. This fantastic textile product has been called "part of the dream world that has actually come true." There are already more than 4,000 Fiberglas products in use. Many of them are doing things no textile substance and no fabrics have done before. Already Fiberglas has made notable and far-reaching contributions to better living in such vital matters as weight saving, noise abatement, fire protection, temperature control and air purification. American Fabrics for the first time undertakes a thorough exploration of this little known and largely uncharted textile terrain.



The making of Crown Glass, from an 18th century engraving.

The old glass blower's magic has been surpassed by the magic of a new American Industry

The Birth of a New Industry

THOUGH GLASS IN TEXTILE FORM is still so new that most people (including many textile experts) don't know what it's all about, the story goes back far beyond the written records of the human race. There is every reason to suppose that prehistoric man accidentally produced strands of glass fibers by poking a camp fire on the sands, long before his descendants learned how to make glass windows and glass bottles.

While the Venetians contrived to attenuate glass into fairly flexible strands for decorative purposes, the first glass fabrics did not make their debut until the Columbian Exposition of 1893 in Chicago, when an actress by the name of Georgia Cayvan appeared in a glass dress and drew gaping crowds who hoped to see a free peep show at point blank range. Even today a lot of people can't seem to get it through their heads that glass fibers are first and foremost *not* transparent.

The man responsible for this strange departure in couture was Edward D. Libbey, of the Libbey Glass Company, who had succeeded in drawing coarse fibers from the heated ends of glass rods. A warp made up of these fibers was worked together with a filling of silk threads to make Miss Cayvan's dress.

In the dawn of the twentieth century a number of patents were issued in Germany and England for drawing fibers from glass. Though too coarse for weaving, they were used to some extent in thermal insulation by the Germans, prior to World War I.

First Explorations

It was not until the early thirties that the possibility of manufacturing glass fibers was first seriously explored in the United States, with considerable research undertaken by Owens-Illinois Glass Company and Corning Glass Works — at first independently and later on a joint basis. Many millions were poured into the venture and there were numerous discouragements and setbacks before any substantial progress was noted. At length, in November 1938, Owens-Corning Fiberglas Corporation was organized as an independent company to make and market Fiberglas products.

The new company had a sales volume of $3,500,000 in 1939. In 1946 the figure was $35,000,000 and by 1952 Fiberglas sales totalled $101,000,000. Estimates for 1953 reach the figure of $115,000,000.

The first Fiberglas products which enjoyed any considerable commercial acceptance were filters. Then in rapid succession came thermal insulation materials, plastic reinforcements, electrical insulation, curtains, draperies, and so on through page after page of fine print. There are now some four thousand manufactured products of which Fiberglas is a component. In fact there have been so many new Fiberglas items during the last few years that it has been necessary to clamp down on some very promising new projects in order to give some elbow room!

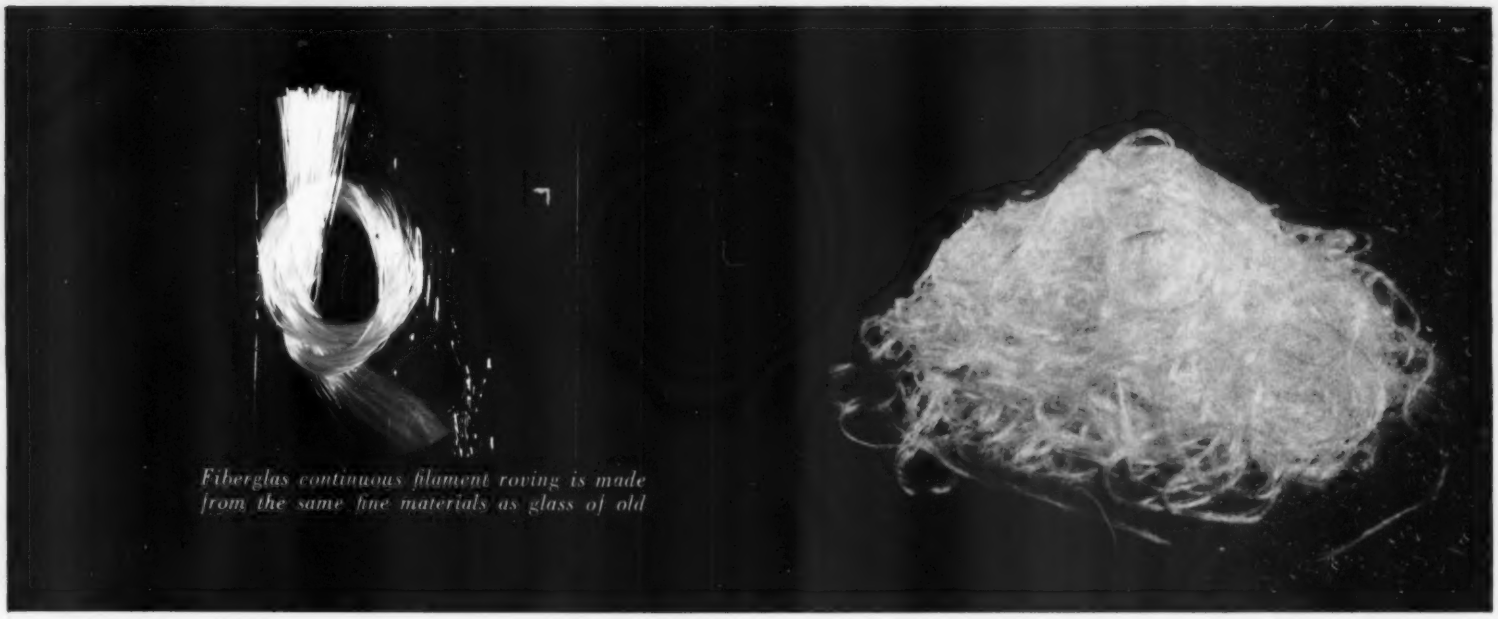
The Fiberglas people no longer have the field to themselves. In fact they wouldn't want to go it alone under any conditions. Harold Boeschenstein, President of Owens-Corning, puts it this way: "We've built a company and now we're trying to build an industry." Accordingly, Fiberglas processes have been licensed to Libbey-Owens-Ford Glass Company, Pittsburgh Plate Glass Company, Gustin-Bacon Manufacturing Co., and Ferro Corp.

There are many new trade names in glass textiles: Vitron, Ultralite, Ultrafine, Aerocor, Macrolite, Glastic, as well as an endless stream of new products spilling all over the market. It must be clearly understood that there is one great department of the textile business into which glass fabrics have so far scarcely penetrated, and that is wearing apparel. Even here important exceptions must be noted, such as Fiberglas-insulated linings for outerwear and Fiberglas linings for shoes now being evaluated by the Government for Arctic service.

But for the moment we might as well forget about glass clothing, although Marilyn Monroe or her press agents are still reported to be interested in a glass bathing suit. Our researches in Fiberglas will soon reveal far more challenging products.

* * *

IF YOU ARE BORN with the average American curiosity concerning interesting and unusual processing, the story of the making



Fiberglas continuous filament roving is made from the same fine materials as glass of old

of Fiberglas is most emphatically for you. But don't expect anything startling in the weaving of the cloth. This is done on conventional machines in more or less the conventional way, with only minor modifications.

It's in the manufacture of the yarns where the fun begins. Almost immediately you leave previous textile experience behind, and get into dimensions of incredible fineness, winding speeds of more than a mile a minute, and temperatures above two thousand degrees.

The whole business from start to finish was conceived in the mind of man — planned and plotted by a devoted group of Owens-Corningites who were sure that pliable, weavable, usable glass yarns could be made, in spite of the dubious record of previous experimenters.

Many persons contributed in varying degrees to the development and perfection of the processes that today make it possible to produce the various commercial forms of Fiberglas. Prominent among these were Games Slayter, who today is vice president of Owens-Corning in charge of research, development and engineering, and John H. Thomas, vice president of the company and general manager of its Textile Products Division.

Diversity of Research

Problems faced and overcome by Fiberglas researchers, with virtually no experience or precedent to guide them, included such diverse matters as making glass with properties never before found in glass, designing high speed machinery capable of drawing fibers to diameters as small as 0.0002 inch, and combining fibers with binders and sizings to produce properties that would give the products wider industrial and consumer applications.

In the beginning there were only the ideas and convictions of this undaunted group — almost nothing in the way of a practical pro ess. From there on in the record is virtually a blueprint of American technology at work — from original ideas to laboratory notebook to laboratory experiments to pilot plant and, ultimately, to commercial production.

(please turn)

HIGHLIGHTS IN GLASS TRADITION AND CRAFT

While tradition states that Egypt was the birthplace of the glassmaker's art, archaeological research has failed to discover any rudimentary glassware which could lend support to this idea.

Pliny asserts that the discovery of glass was made in Syria on the banks of the river Belus under the heights of Mount Carmel, and there is evidence of a long tradition of glass making in that region.

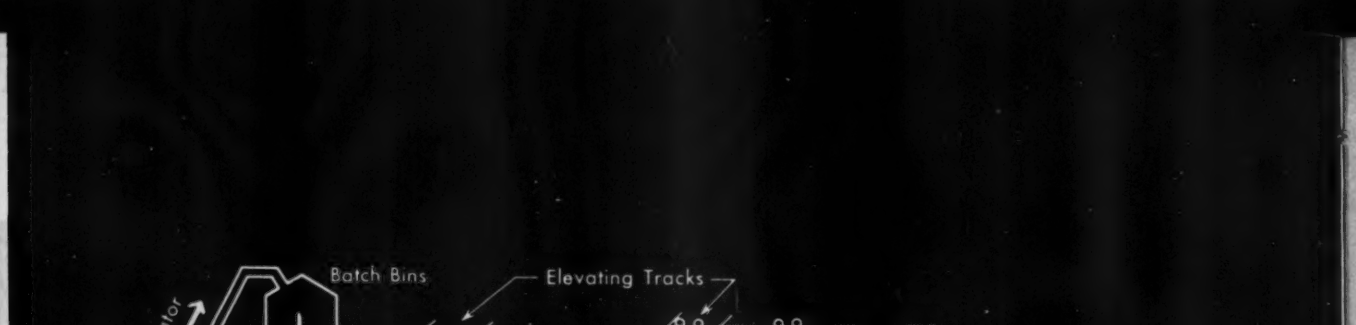
Research shows that glassmaking is a craft of great antiquity. A glass found at Nineveh bears the seal of Sargon, who was King of Assyria in the year 722 B.C.

The Romans used glass more extensively than any other civilization except our own, using it for domestic wares, for decoration, for ornaments, for pavements, as a coating for walls, probably for glazing windows, and for rudimentary optical uses.

When the Roman Empire disintegrated the glass craftsmen went to Constantinople, which became an important center. Possibly the oldest window panes in their original settings in the world are in Hagia Sophia, built over 1000 years ago.

THREE OF THE MEN RESPONSIBLE FOR THE DEVELOPMENT OF FIBERGLAS

JOHN H. THOMAS — HAROLD BOESCHENSTEIN — GAMES SLAYTER



Left: Strands of staple fiber and continuous filament yarn, greatly magnified in scale.

The Making of Fiberglas

Preliminary Yarn Processing

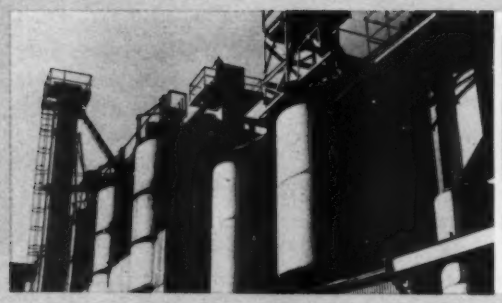
TWO PROCESSES — continuous filament and staple fiber — are employed to produce Fiberglas yarns. Both begin with accurate batch formulation, glass melting, and refining. Throughout the entire operation the processes are subject to an unusually high degree of scientific control and inspection. The raw materials comprising the glass batch are inspected, analyzed, and mixed in accordance with formulae adapted to the end-uses of the fibers. From precisely controlled furnaces, the molten glass flows to marble-forming machines which turn out small glass marbles 5/8" in diameter.

One reason for forming these marbles is to permit visual inspection of the glass for the purpose of eliminating impurities such as *stones* or bits of refractory material that would lower the uniform fiber quality or interfere with subsequent operations. The marbles are then remelted in small electric furnaces as a part of the fiber-forming operation. Recent improvements enable textile fibers also to be drawn from the original melt, eliminating this marble operation.

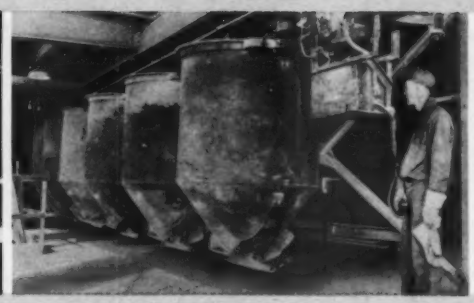
Continuous Filament Process

THE CONTINUOUS FILAMENT process provides filaments of indefinite length measurable in miles. The fibers are formed by mechanical attenuation. Molten glass flows downward through temperature-resistant metal alloy feeders having more than 200 small orifices. As the fine streams of molten glass emerge from these holes, they are gathered together, run over a pad where a sizing is picked up, and then carried to a high-speed winder. Because the winder revolves at a much faster rate than the stream flows from the melting chamber, the tension attenuates the glass while it is still molten and thus draws out filaments that are a mere fraction of the diameter of the orifices. The winder draws out the continuous filaments at rates above two miles a minute.

After being drawn onto a forming tube, the continuous filaments are subsequently processed into Fiberglas yarns and cords through conventional twisting and plying operations on standard textile machinery. The processed Fiberglas yarns are used in a multitude of industrial applications.



The raw materials for the glass are accurately mixed and stored in quantity at the factory.



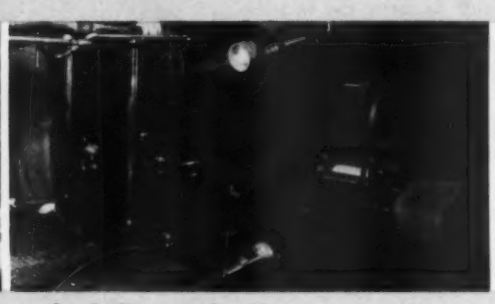
Batch cars carry the ingredients to the batch mixer in measured quantities

Careful inspection insures the purity of materials from which the fibers are made

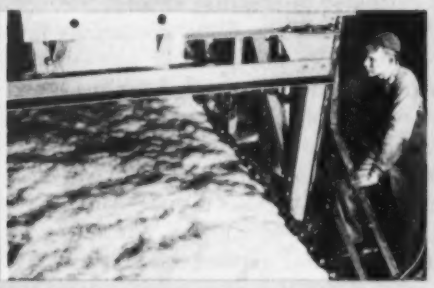
Organic sizing is applied to the filaments as they emerge as streams of molten glass

After the sizing has been applied, the strands are wound on a high speed winder

Continuous filament fibers are mechanically drawn from banks of glass furnaces



Staple fibers are first blown onto a revolving drum, then gathered in sliver form



Wool is formed by impact of high pressure steam on filaments drawn from bushing

Wool Process

IN ADDITION TO the various Fiberglas yarns and the fabrics woven from them, there is another important textile substance in this fabric family — *Fiberglas wool.* As a matter of fact, Fiberglas wool came first. The preliminary processing follows the familiar pattern of melting and refining. Once again the molten glass flows through tiny orifices in thin streams. It is caught by the impact of high pressure steam jets that attenuate it into long, resilient fibers.

These are gathered at the base of the forming chamber, on a traveling conveyor, as a white fleecy mass of fine fibers, intricately interlaced with each other.

The product may be used for thermal insulation in substantially the form thus produced; or it may be fabricated into such items as filters, mats, or blankets with a variety of facings; or it may be treated with a thermo-setting resin binder, compressed to the desired density and thickness, and passed through an oven where the binder takes its final set. The resultant product may range from a flexible batt to a semi-rigid or rigid board.

Staple Fiber Process

THE STAPLE FIBER PROCESS forms a fiber having long-staple characteristics. It uses jets of compressed air to attenuate or draw out the molten glass into fine fibers. The molten glass flows through orifices in special temperature-resistant metal alloy feeders at the base of each furnace. The impact of the compressed air literally yanks the thin stream of molten glass into fine fibers varying in length from 8 to 15 inches. The fibers are driven down onto a revolving drum on which they form a thin veil resembling a cobweb.

In their almost instantaneous descent to the drum, the fibers pass through a spray of lubricant and a drying flame. This web of fibers is then gathered from the drum into a strand that is lightly drafted in the ensuing winding operation so that the majority of the fibers lie parallel with the length of the strand. This soft strand can be further reduced in diameter, if desired, and then twisted and plied into yarns of various sizes, using textile machinery and processes similar to those employed for long staple materials. (*please turn*)

The War Record of Fiberglas

THERE IS AN IMPRESSIVE list of highly technical and enormously valuable products which managed to be developed in the nick of time to play a vital part in the war against the Axis powers. The classic example, of course, is the A-bomb, but there are many others; and in the aggregate the balance of technological power had been swung away from the enemy over to our side long before Hiroshima. As in previous wars, it was the grim urgency of military needs which hastened a great deal of this development beyond anything that the most confirmed optimists would have dared to predict.

A conspicuous case in point is Fiberglas, which saved an incalculable number of lives from death by fire and otherwise contributed to eventual victory.

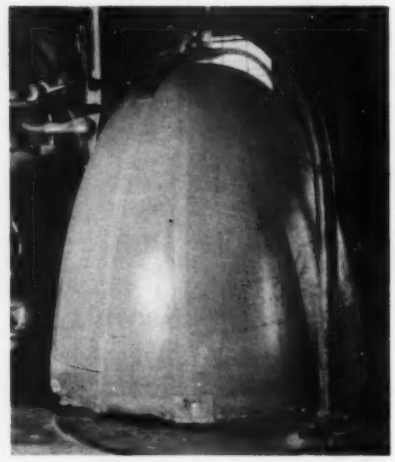
Since Fiberglas fibers are strictly non-flammable and will not even smolder nor give off noxious fumes, they are obviously made to order for combat conditions. In view of the material's incombustibility and noteworthy insulating qualities, it is not surprising to learn that six months after the United States declared war on the Axis, 75 shipyards were using Fiberglas insulation in various forms — for shipboard living spaces, magazines, bulkheads, pipes, ventilating ducts, casings, boiler uptakes, and refrigerated spaces.

Weight Factors

Fiberglas was also used for thermal and acoustical insulation in the cabins of Army and Navy planes. Non-combustibility was not the only reason; light weight and low moisture pick-up were also important factors. Weight has always been a critical factor in the design of planes. Every pound of weight saved means an increase in cruising range, load capacity and maneuverability, not to mention a decrease in fuel consumption. Plane manufacturers were sometimes paid a bonus amounting to as much as $300 for every pound of weight cut from their planes. This is certainly eloquent testimony to the vital importance of the weight-saving effected by Fiberglas, not only in the form of thermal insulation, but also in reinforcing plastics for radomes, ducts, and other aircraft parts; and in electrical insulation, which made it possible to decrease the size and weight of motors and generators.

In this connection it can be noted that some materials used for insulation may pick up moisture, adding hundreds of pounds to the weight of a plane flying through humid atmospheres. Here is another instance where Fiberglas turned out to be not only a weight-saver but also a life-saver because of its negligible moisture pick-up combined with its extreme lightness of weight.

There were other notable instances where lightness of weight of this versatile textile product came to the rescue of our hard-pressed procurement officials. For example, by the use of Fiberglas insulation in walls, it was possible to manufacture portable shelters sufficiently light and compact to be transported by air for personnel of the Army Air Corps in Arctic climates. In a typical shelter, weighing approximately 200 pounds, it was possible to save over 20,000 pounds in the weight of fuel that had to be transported for each shelter during the heating season.



A Radome in the fiber stage before removal from the mold on which it is formed. The development of these domes which are transparent to radar waves constituted an important step forward.

The war spurred research and experimentation to the very utmost. The results justified this tremendous effort. In fact, it can definitely be said that the needs of the armed forces led directly to two of the most important developments of Fiberglas, both of which have carried over into innumerable civilian uses:

1. **Fiberglas reinforcement for plastics.**
2. **Fiberglas resin and rubber-coated fabrics.**

Fiberglas-reinforced plastics provided high-strength, lightweight parts for aircraft. They were also developed into body armor for amphibious forces, and for many other applications. Fiberglas fabrics were used for camouflage because of their resistance to salt, air, dampness, and fungi; also for hangar door curtains and drinking water tanks. You could go on and on and get pretty technical, listing the endless naval and military applications of this inexhaustible textile substance. In many cases, Fiberglas was not merely the best material for the purpose but the only one that was available or practical.

Take, for example, the special shields used to shield parachute flares. Everybody connected with aviation knows the whole story, but to all others it is a distinct revelation. It will be recalled that flares dropped from planes and parachutes were necessary to illuminate objectives of a night bombing attack. On the other hand, if the light of the flares had not been shielded

The high impact resistance of Fiberglas reinforced plastic has led to its application in the form of bullet resisting body armor and flak vests for military personnel. Shown is a photograph of an army test in which the Fiberglas reinforced vest repelled a .45 caliber bullet fired at close range.

Fiberglas field maintenance shelter which is used by the U. S. Army Air Force in operations in all types of climate and conditions.

Fiberglas with plastic is employed in airmen's flying helmets to give high impact resistance with light weight comfort.

A sleeping bag designed by the Quartermaster Corps which employs nylon fabric and Fiberglas layers for insulation, resists wet and cold.

The Army Air Force fire fighting suit which has an inner (white) lining of noncombustible Fiberglas cloth. The suit is used for protection against flash burns and searing heat.

overhead, bombardiers would not have been able to see the ground because of the glare of one million candle power in each parachute flare. Furthermore, attacking planes would have been revealed to anti-aircraft gunners. Fiberglas fabric was the only practical material that could be found which was able to withstand the intense heat of the flares.

Air Filters

Offhand, you would not think that such an apparently remote product as Fiberglas air filters could have had much to do with furthering the war effort. Yet they were instrumental in eliminating grave hazards in ordnance plants, where they were employed to collect particles of TNT and other explosive dusts from the air. If allowed to accumulate on the walls, floors, or machines these explosive particles could have caused incalculable wreckage and loss of life. Throughout the eighteen miles of buildings and vaults at the Oak·Ridge, Tennessee atomic bomb plant, Fiberglas Dust-Stop air filters were used to clean thirty thousand cubic feet of air per minute. Other Fiberglas filters were used to prevent the entry of dusts into lubrication systems and into machines manufacturing precision instruments.

It is therefore not surprising to learn that during the war years practically the entire output of the Fiberglass factories was devoted to meeting the requirements of the armed forces. Less than three per cent of the entire Fiberglas production in any form whatever was available for civilian purposes. When the war was over, there was a brief period during which the Owens-Corning Fiberglas Corp. found itself without markets for its products.

Industrial Applications of Fiberglas

NO ONE CAN WRITE about the fibrous glass industry without resorting to superlatives. Rave notices are the rule. *Business Week* hails it as the emerging industrial giant and calls Fiberglas a unique material of tremendous potential that is the key element in hundreds of products, pervading almost every facet of the American scene. Other business publications have editorialized in similar vein.

The fascination of Fiberglas goes further than that. When you read the long list of fantastic things made from Fiberglas — such as firefighters' suits, golf clubs, dental fillings — you get the feeling that this is not the good old world you have always known. You get the distinct impression that your future is passing you rapidly and that you are standing with one foot in the Buck Rogers era.

Doesn't it amaze you to learn that you can wrap ice cream in Fiberglas insulation, put it into a hot oven with a pie, and bring the ice cream out, still hard, when the pie is baked? And what about the trick of keeping corn fresh for weeks in a Fiberglas wrapping? And the Fiberglas furniture as strong as steel, but so light that a girl can easily lift it with two fingers?

To be sure, the industry's experts take all these marvels in their stride and deplore all the loose talk about miracles and magic. They would rather furnish you with the fact that the use of Fiberglas in an electric motor can reduce the motor at least one *frame size;* or they would rather discourse on a hundred and one other efficiencies and economies that this unique textile makes possible. One shrewdly suspects that there is in the industry a widespread appreciation of the value of products that even a Jules Verne would hardly have ventured to predict. Any way you look at it, when you follow the course of Fiberglas in industry, you are setting forth in a new world.

How Fiberglas makes the Modern World

. . . by more fun for all, more than fifteen million glass rods are in use today

. . . by greater protection as an interlining in ski and other types of jackets

. . . by weight saving in luggage and in many items of daily usefulness

. . . by better transportation, with dent resistance and rust resistance

. . . by simplified manufacture and elimination of expensive molds and dies

Fiberglas *. . . continued*

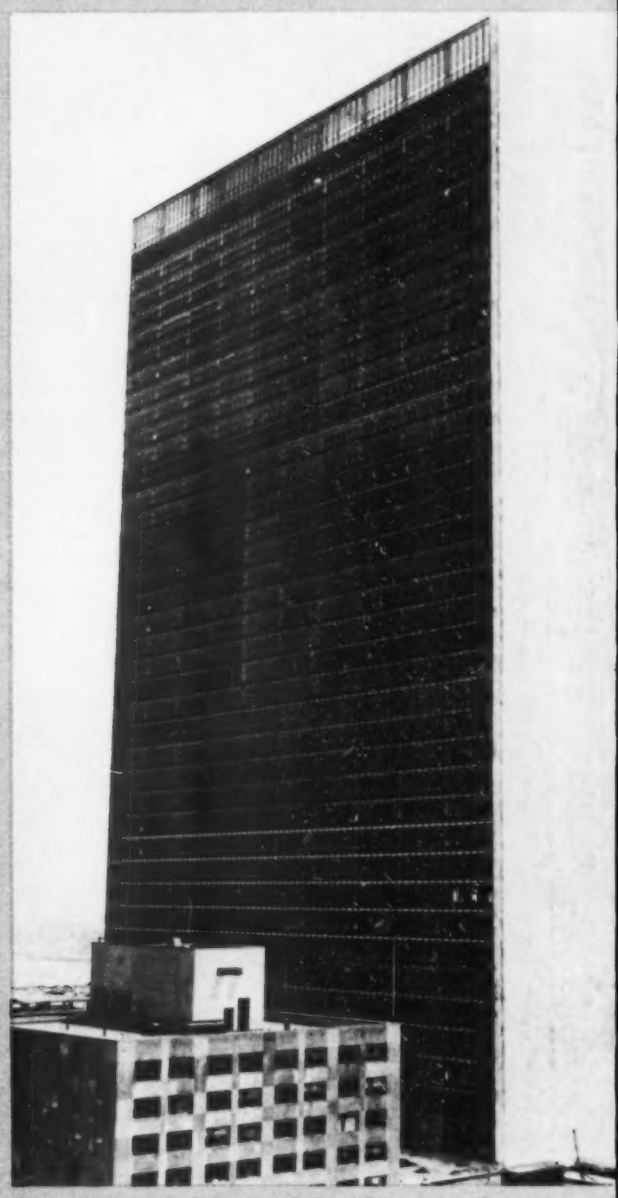
Why does Fiberglas accomplish things beyond the scope of previous textiles? For the answer to this question you must inquire into the inherent characteristics of glass as a substance. At this point a review may be in order.

In the first place, Fiberglas offers extraordinary resistance to, or complete protection from, most of the forces that cause deterioration or destruction of fabrics — such forces as fire, heat, water, rot, rust, fungi, chemicals, distortion. When you

a Better Place to Live in . . .

. . . by noise abatement through the use of acoustic tiles in buildings

. . . by fire resistance through use of Fiberglas in homes and institutions



Fiberglas covered ducts aid the efficiency of the air conditioning in the United Nations Secretariat

. . . by structural improvement which makes for light weatherproof housing

. . . by personal protection in industrial, chemical and radiation laboratories

consider the havoc wrought by such forces and the effectiveness of Fiberglas protection against them, you begin to understand the giant strides made by this textile substance in industry.

In other words, you are suddenly confronted with a brand new behavior pattern for textiles. You are able to use fabrics in ways and for purposes that were impossible previously. The net result is today the opening of new fabric frontiers whose vastness and versatility are only dimly discerned.

THE CURTAINS

Sheer bouclé drapery fabric of all Fiberglas yarn by TITUS BLATTER

THE DRAPERIES

Screen printed all-Fiberglas heavy boucle drapery fabric by DAN COOPER

THE LAMPSHADE

Synskin lampshade material of Fiberglas and vinylite by POLYPLASTEX UNITED

Opposite: A new luminosity is diffused into American homes through Fiberglas curtains, lamp shade materials and draperies

Fiberglas curtains save cleaning and flameproofing bills for a well known chain of restaurants in New York City

Fiberglas Curtains and Draperies

ONE OF THE MOST IMPORTANT and valuable advantages of Fiberglas decorative fabrics is turning out to have a strangely disadvantageous side to it; namely, the fireproof feature. Surely it is impossible to exaggerate the desperate importance of fire protection, not only in the home but also in public places. Think how many lives might have been saved if the Cocoanut Grove in Boston had been decorated with glass drapes; or have you already forgotten that more than five hundred people perished in that holocaust?

On the other hand, it would certainly be selling Fiberglas decorative fabrics short if the housewife were permitted to think of Fiberglas the way she thinks of a fire extinguisher or a fire insurance policy. This tends to be the case when the fire protection feature of Fiberglas is given top billing.

The new curtains and drapes made of this endlessly versatile textile possess two other great basic qualities which completely answer the housewife's most insistent and persistent questions and certainly should not be subordinated.

Easy Maintenance

The first quality is their inherently practical nature. They are charter members of America's great new family of easy-care fabrics that can be cleaned and washed and kept shipshape with minimum effort — fabrics that need no pampering and require no expert supervision. Fiberglas decorative fabrics are made to order for this servantless era of ours, since they have certainly reduced the drudgery of household fabric care to an all-time low. They will not wrinkle and, since they do not absorb moisture, they can be rehung damp and completely wrinkle-free without ironing or stretching.

The other great quality possessed by curtains and draperies made of glass is their inherent beauty. This is particularly true of the drapery fabrics, which introduce a new color brilliance into fine hand prints. In fact there is definitely extra beauty in Fiberglas drapery fabrics because they are translucent. Hung over light, these draperies actually glow with color that is more like a stained glass window than anything else you can name. Some really beautiful effects can be obtained.

It took a great deal of doing to make all this possible — a research program extending over years, for the first household fabrics made of glass left a great deal to be desired. They had an inferior hand and poor draping character. These difficulties were caused by the fact that the fiber is made up of innumerable tiny glass rods, which have an intrinsic tendency to remain in a straight line. This would occur the minute the materials were handled; hence the wrinkles and other fabric faults. There was also trouble with tiny skin-irritating spicules in the glass yarns.

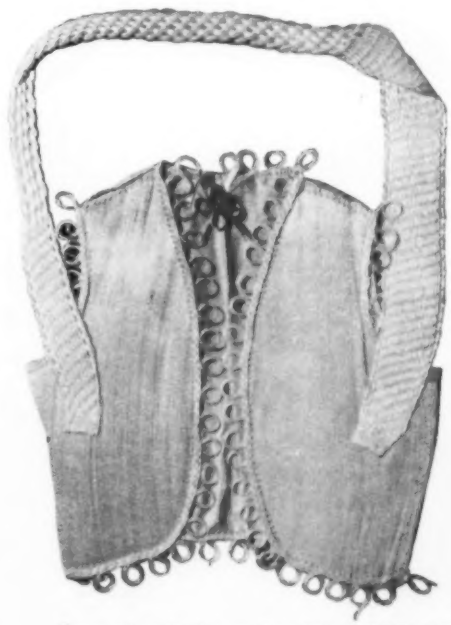
All these fabric faults have been entirely corrected by *Coronizing*. This process puts a permanent crimp into the tiny glass rods by subjecting them to intense heat, approximately 1200 degrees F. After Coronizing, the fibers can never straighten out again. In other words, this gives a permanent set to the weave and makes the fabric permanently wrinkle-proof, in addition to softening it. The cloth is then passed through a finishing bath in which resin and pigment are applied, improving its resistance to abrasion, and leaving the surface soft and smooth.

Steady Growth

Glass curtains have been on the market since 1948. They have been constantly gaining ground. More and more stores are devoting more and more selling effort and advertising effort to this interesting product. These curtains are unquestionably the easiest to care for since they can be washed and rehung in seven minutes. Their inert, inorganic character makes them impervious to deterioration by sun, mildew, rain, heat, or humidity.

The same advantages apply to Fiberglas drapery fabrics. They defy deterioration from fire, water, sun, heat, fungi, or

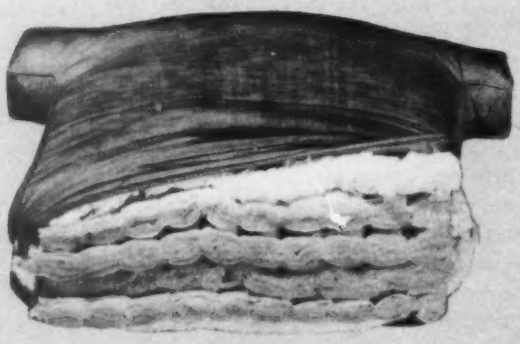
(please turn)



Spun glass jacket and necktie exhibited in the Columbian Exposition, Chicago, 1893

Steps in the care of Fiberglas draperies: 1. They are passed through a soap or other detergent solution; 2. They are rinsed and the excess water is removed; 3. They are rehung damp. No pressing or ironing is required

Fiberglas . . . *continued*



Fiberglas seat cushioning

New Fiberglas seat cushioning material, reflecting five years' research and three years' field testing, achieves a new level in comfort balance between softness and support. In addition to providing support, Fiberglas cushioning material is exceptionally light in weight; in a single cushion pad, fibers of glass intertwine to form millions of tiny air pockets. An increasing number of furniture manufacturers are incorporating Fiberglas into cushioning.

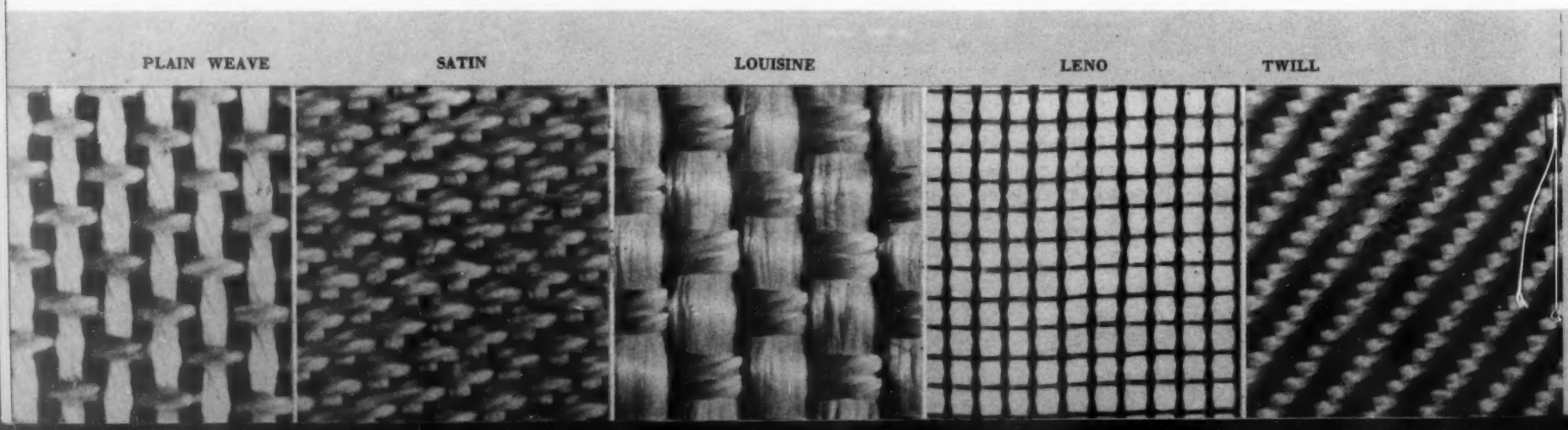
insects. Even the largest and most elaborate draperies made of these remarkable materials are machine-washable, in commercial laundries or at home.

A wide variety of weaves and textures have been introduced, first in yarns made of continuous filament, and recently in staple fibers. But don't go looking for any jacquards, or yarn-dyed fabrics, or dope dyes. It just can't be done. Because of the inherent trait of glass fiber to repel water, it is obvious that there is no way for the dye solution to penetrate.

In case you should ever encounter colored Fiberglas yarns, don't let this throw you. You will find that the color is merely coated on for *tracer* purposes in various industrial applications.

Nor is it possible to achieve effective blends or mixtures in decorative fabrics. At least, combinations with other staples or filaments will continue to be impossible until a fabric is found that can share the ability of glass to withstand a temperature of 1200 degrees required for Coronizing.

In addition to the new values introduced into decorative fabrics by the brilliance of colors printed on glass fabrics, and the characteristic glow suffused through translucent yarns, you have exceptional draping qualities. Not only does Fiberglas drape beautifully, but it remains pretty much as draped. In other words, the housewife can calculate her decorative effects very precisely and count on their permanency.



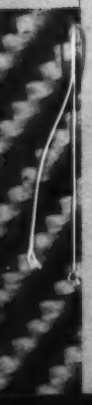
A vinyl-coated Fiberglas fabric which is fire-resistant and is made in a variety of embossed designs and colors. It is used in stage curtains, for schools, for railroad window shades, for aircraft flooring and other applications

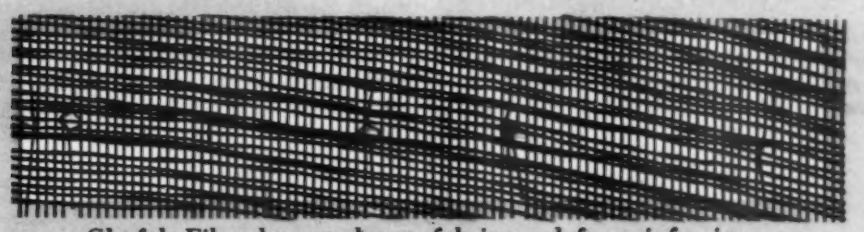
Some Glass Fabrics Designed for Special Purposes

Glass fabric for construction and recovering of small boats. One of the most successful applications of broad glass fabric in combination with plastic resins has been for the repair and construction of small boats, including sailing vessels and landing barges, in addition to canoes and powered craft. Contributing substantially to this use was the development of special resins, as well as the availability of an economically-priced broad fabric. One specialized company in this field has developed a special resin which makes possible the application of glass fabric to the hull of a boat without requiring the fabric to be tacked. This development makes possible the use of glass for the recovering of the hulls of boats up to 50 feet in length, thereby greatly expanding the potential use of glass fabric in this field. In addition, Fiberglas is used for recovering deck and cabin surfaces.

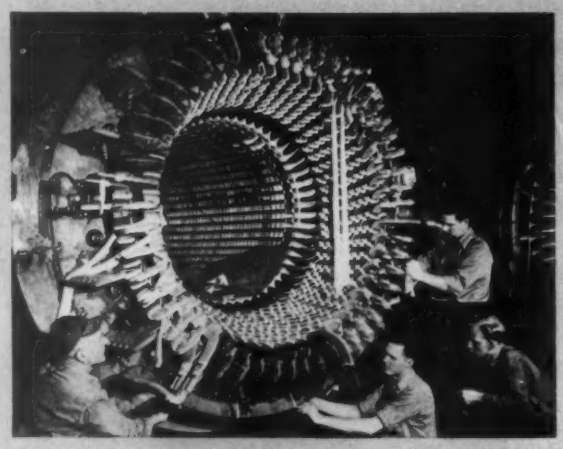
Glass fabric designed for low pressure molding. After many months of experimental research, in late 1952, Hess, Goldsmith & Co., introduced Form-Fab, a glass fabric which stretches while the yarns remain stable. This cloth has up to 70% elongation and equal strength can be obtained in all directions. It has an average breaking load of 567 pounds per inch of width in the warp and 349 pounds per inch of width in the filling. Primary use of this material is as a base for reinforced plastics in the low pressure molding of industrial products with compound curves. It eliminates the requirement for tailoring and lends itself to applications where pre-forms previously have been used. This includes such end-products as wing tips, radomes and heating ducts in the aviation industry; fenders and curved body sections in the automotive industry; curved hull sections in the boat-building industry; helmets for construction and other heavy industry workers; machine housings and luggage.

Lead Glass Fabric. In the field of protection against X-ray and Beta radiation, the idea of producing lead glass fabric was conceived by Dr. Vincent W. Archer, M.C., and associates of the Department of Roentgenology, University of Virginia. Made into gowns and aprons, this fabric is of primary use in the protection of radiologists, by providing a durable, flexible, cleanable garment as protection against X-ray and Beta radiation of atomic fission products. Its advantages are: it is effective in light weight; it is flexible and strong; it is chemically resistant; it is non-deteriorating in storage; it is non-shrinking.





Glasfab Fiberglas membrane fabric used for reinforcing waterproofing on roofs, walls, pipelines, flashings, bridge decks, foundations and expansion joints



As Fiberglas developed it was necessary to develop new ways to reach new markets. Take for instance the electrical industry:

Shortly after the war, an electrical detail crew was sent from city to city to talk to users of electrical equipment, mostly large industrial firms, to add to the company's knowledge of the needs in electrical equipment, and to gather information about success stories of Fiberglas insulation.

Since it is in the repair and rewind shops that motors that have failed are restored to service, the detail crew found there a rich source of information on causes of failures and the best possible opportunity for proving claims made for Fiberglas. The detail crew was able to amass numerous case histories in which the use of Fiberglas in rewound motors resulted in greatly increased service life and consequent economies to the user.

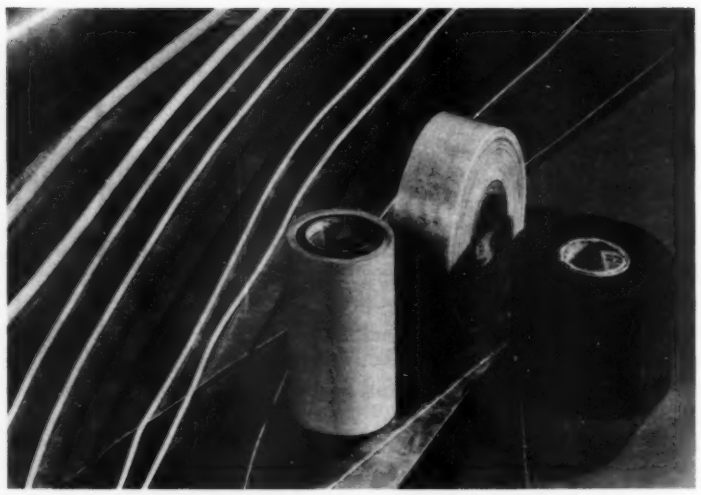
Fiberglas in the Electrical Industry

THE FIELD OF ELECTRICITY is one of the first in which Fiberglas textiles were extensively used. In fact, the début dates back even prior to 1938. The company originally furnished yarn to weavers and bought the finished product from them for resale to the electrical industry. Now the yarn is sold direct to weavers as well as to producers of wires, cables, and apparatus.

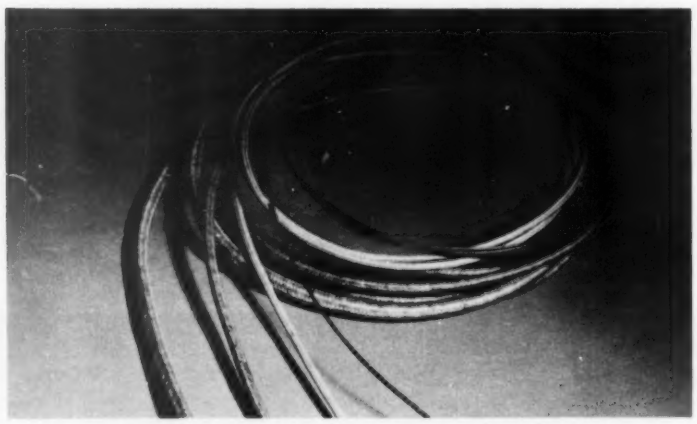
Fiberglas has been playing an increasingly important role in special developments for electrical insulation. Fiberglas tapes, braids, cords, and cloths offer an excellent means of designing smaller, lighter, higher-rated equipment. First of all, they offer the staunchest resistance to high temperatures, moisture, chemicals and other forces that are always at work seeking to break down insulation.

An Ideal Material

As a matter of fact, it may be said in general that the amount of heat which electrical insulation can bear is the chief factor in determining the temperatures in which equipment can operate, the overloads it can stand, and the size and weight of the equipment that must be employed. Cloth made out of glass is indeed an ideal electrical material since it is unaffected by oils as well as most acids and vapors, since its breaking strength is twice that of organic textures, and since its moisture-resistance and temperature-resistance are unparalleled.



Fiberglas forms the base of electrical insulations in use for many types of electro magnetic equipment



Fiberglas contributes to better wire and cable for home wiring and for residential and domestic applications because it is more economical, superior chemically and mechanically to other insulation

Thanks also to non-bulking qualities, engineers have been able to reduce the size and weight of electrical units. Fiberglas-insulated motors have been made that weigh only a pound per horsepower, a weight saving of tremendous importance on military and naval airplanes.

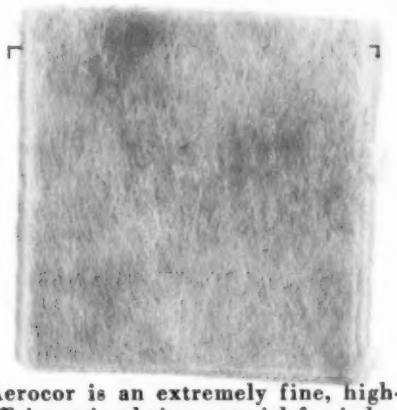
Motors are not the only electrical items whose size and weight have been reduced by Fiberglas. Electrical transformers on telegraph poles, which are normally large, heavy, and filled with oil, have now been greatly reduced in size and weight. The use of glass silicon instead of oil effects a saving of forty to fifty percent in weight, and prevents disruption of service by lightning, which the old insulating materials could not withstand.

Another very large marketing area for Fiberglas yarns and materials is in the electrical insulated wire and cable field, as braids, tension members and insulating tapes.

Fiberglas for Thermal Insulation

HERE AGAIN we have one of the earliest widespread commercial applications of glass textiles. Fiberglas thermal insulation, which leaped far ahead in wartime developments, now insulates homes, factories, refrigerators, food containers, roasters, stores, heaters, railroad cars, ships, trucks, buses, and airplanes.

What has Fiberglas got that other insulating materials haven't? In the first place, extremely low thermal conductivity, the result of millions of air spaces entrapped by interlaced fibers. In addition, the contact points where the fibers cross and



Aerocor is an extremely fine, high-efficiency insulating material for industrial applications, made by FIBERGLAS

touch are exceedingly small, so that heat cannot pass readily from one fiber to another.

In the second place, glass wool does not tend to become matted or to settle down when bounced or jiggled; quite the reverse, it will actually fluff up. It is light in weight, easy to handle, easy to cut and fit. And, of course, it is fireproof and just about everything-else-proof.

Fiberglas thermal insulation comes in the form of batts, blankets, boards, bulk fibers, or shredded fibers. In other words, in these applications you are dealing with a textile substance rather than a woven fabric.

Sheets and Boards

In addition to the forms of Fiberglas insulation already listed, there are semi-rigid and rigid sheets or boards used in buildings or in the hulls of ships. Other Fiberglas boards accurately molded into cylindrical form provide effective insulation for pipes at temperatures up to 800 degrees F., and higher when specially reinforced. In fact, glass insulation in felt form, used to insulate aircraft jet engine cones and tail pipes, will withstand temperatures up to 1800 degrees.

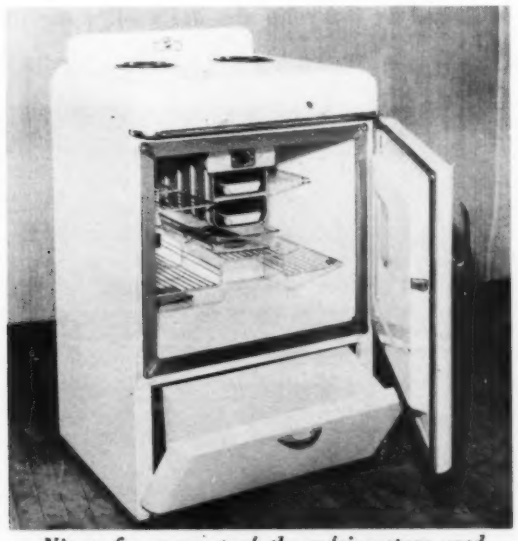
Extremely fine glass fibers, known as Aerocor, are the kind used to insulate shipping cartons, ice buckets, picnic jugs, and handbags for carrying hot or cold foods. These fine fibers are likewise employed as an interlining for outerwear, uniforms and footwear for troops in the Arctic.

In addition to its signal contribution toward the advancement of thermal insulation, Fiberglas has made it possible for the engineers to solve stubborn problems in acoustical insulation. There can be no question of the fact that Fiberglas is the most effective soft pedal that has been discovered for toning down the ever-increasing noise of modern living.

Just how a material absorbs sound is still not fully understood, but it has been stated that the sound is trapped in the voids or open spaces between interlaced fibers, where the sound energy is transformed into heat. Therefore, the finer the fibers of the insulating material, the larger and more numerous the open spaces, and the greater the acoustical efficiency. In other words, acoustical insulation is another field where Fiberglas is the ideal material; more so because it does not swell, shrink, burn, or take on moisture.

It is not surprising to learn, therefore, that glass textiles have been given the most difficult assignments in sound control. For example, they have been employed to deaden sound in chambers used at the Harvard University's Electro-Acoustic Laboratories and at the New York Navy Yard.

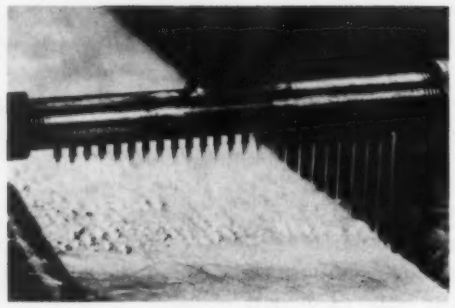
Naturally, Fiberglas is used to deaden sounds in the control rooms of Navy ships and in military and naval aircraft. Fiberglas in the form of boards and tiles is an effective and economical



Ninety-five percent of the refrigerators used in this country employ Fiberglas insulation

A recent development in the use of thermal insulation is the lunch or shopping bag which keeps food warm or cool for several hours

means of controlling sound in homes, offices, and factories; in theatres, restaurants and auditoriums; in motion picture, radio, and television studios. Acoustical board and tile made of this matchless sound-trapping material are the lightest weight mineral-type fire-safe acoustical materials that can be secured.



Reinforcing resin being delivered evenly through nozzles into a Fiberglas mat

Fiberglas Reinforced Plastics

NOW WE COME to the glamour boys of the fibrous glass industry — the famous reinforced molded plastics. In other words, here come the glass boats, automobiles, luggage, furniture, skis, safety helmets, diving boards, fishing rods, and so on, down an ever-lengthening list of products that are lighter, stronger, more highly styled, and more serviceable than their predecessors.

What makes them so? What change is brought about in plastic products by Fiberglas reinforcement? Expressed in ABC terms, you take a floppy mat, combine it with a resin, and produce a new structural material. The resins used to make plastics are like concrete in that they possess great compressive strength but lack the necessary tensile strength. You can make a garage floor of unreinforced concrete, but you cannot make a building of concrete unless you reinforce it.

Similarly, unreinforced plastics would limit you to relatively small articles and would be pretty unsatisfactory. In fact many of them were unsatisfactory in the early days of the plastics industry, and they remained so until the secret of Fiberglas reinforcement was discovered.

Unreinforced plastic could never be a structural material. Just as there are various methods of reinforcing concrete by steel, such as steel mats and spirals, in addition to the familiar girders, so there are different methods of reinforcing plastics with Fiberglas. In fact there are four.

The first and best, as well as the most costly, is with Fiberglas fabric. This method makes it possible to work with an exact thickness of Fiberglas and with as many layers of fabric as required. Hence, fabric reinforcement is the preferred method for aircraft where cost considerations must always yield to the design factor.

Unwoven Reinforcements

The second method is with a bonded (unwoven) mat of Fiberglas. This method entails only about half the cost of fabric reinforcement. Though not so accurate or so even or so controllable, it possesses the advantage of being easier to draw or bend around intricate and irregular molds.

The third method is known as the *pre-form* and it consists of cut fibers or chopped strands used to reinforce shapes that are too complex for the bonded mat. The pre-form method is like the pre-shaping of a felt hat before it is put on a hat form for final contouring.

The fourth and last method of reinforcing plastics is with a pre-mix. Here the chopped strands and resins are pre-mixed in a molding compound. This is the method that possesses outstanding advantages for mass production.

Fiberglas not only gives tremendous strength to a bewildering variety of plastic products, but also possesses the ability to provide strength where it is needed most. If stresses to which the product will be subjected occur in several directions, it is possible to distribute the glass fibers in these directions in proportion to the anticipated degree of stress. If the principal stress is to come from one direction, it is possible by arranging the fibers in that direction to provide the necessary strength substantially in excess of that obtained using structural metals.

Another great advantage of Fiberglas reinforced plastics is their low tooling costs. It is possible to produce even very large parts, like the hull of a boat, without the expense and physical limitations imposed by the use of high pressure presses. This means the elimination of expensive high pressure dies and jigs. Since high stresses are not applied to the molds, they can be of less costly construction. As a result, manufacturers are permitted a frequency of design change that is uneconomical when there is a heavy investment in costly dies. This may prove to be a crucial consideration in the automotive industry where the costs of dies for new models verge on the astronomical.

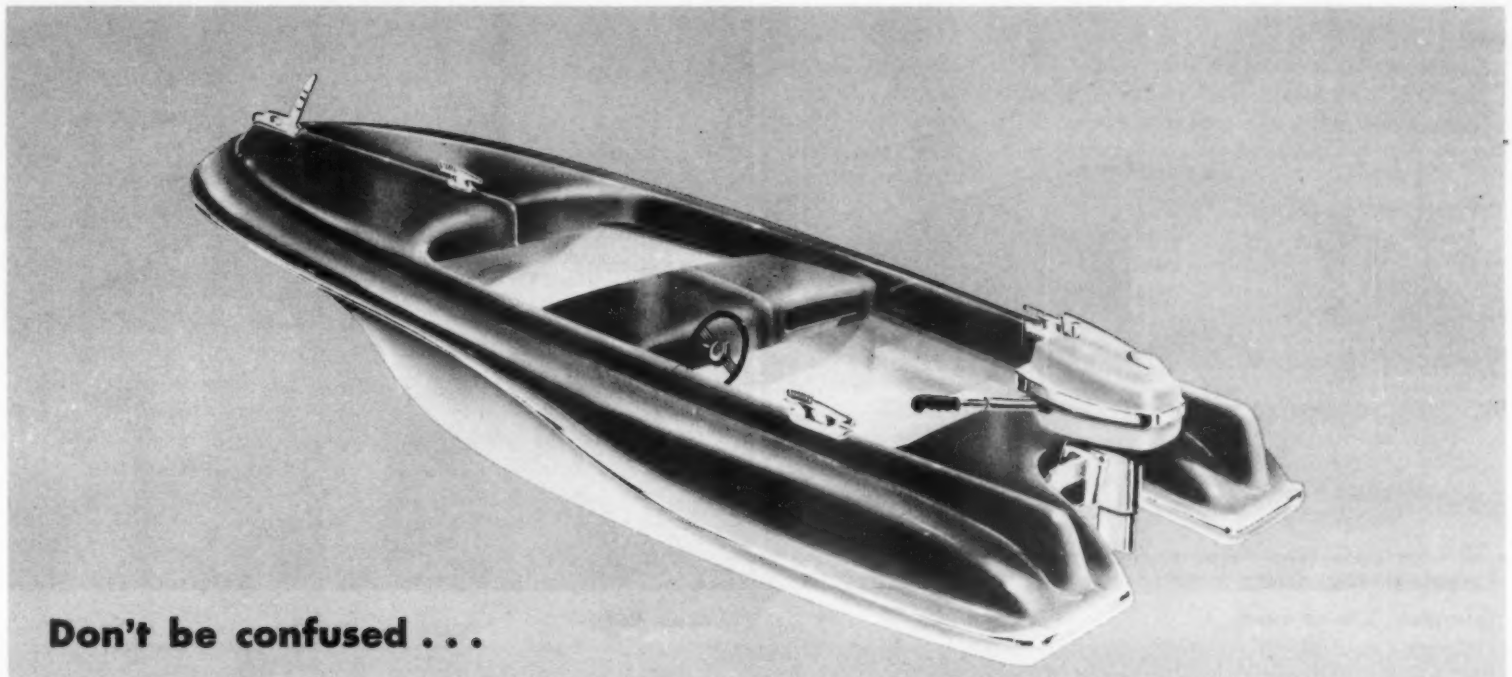
In the case of some products, material and production costs can be substantially cut. The cost of manufacturing the Apex washing machine has been halved by making the inner tub of plastic reinforced with glass rather than aluminum and porcelain enamel that were formerly used. In place of thirty-two parts, formerly required to make the previous Apex machine, there are now two moldings and the weight has been reduced from twenty-eight to fourteen pounds. Furthermore, plastic tubs will not chip or corrode.

* * *

Latest on the long list of product improvements in this category is that of Fiberglas-Polyester resin luggage which is lighter and stronger than conventional luggage. One manufacturer hails this new line of luggage as the "first significant change in the luggage business in years."

Mr. Raymond F. Clark, Vice President of Hess-Goldsmith, the largest weaver of glass fabrics, points out that current developments indicate that "airplane, automobile and boat structures of the next decade may be built almost entirely of plastics reinforced with fibrous glass materials." The conviction that molded plastics reinforced by Fiberglas are only in their infancy seems to be shared by everyone who has studied the situation.

Arion, 42-foot Fiberglas sailing ketch.



Don't be confused . . .

MILLIONS OF FISHING RODS reinforced with Fiberglas can't be wrong. They have been known as *glass* rods by a veritable army of anglers ever since their introduction. We have all heard of the famous *glass* boats: not the kind with the transparent bottom for observation of marine life, but the Fiberglas reinforced variety that defies the laws of wear and tear.

Now along comes Chevrolet's new sports car, the Corvette, with body likewise made out of plastic reinforced with Fiberglas. You would think that it would be known as a *glass* car, but that is not necessarily so. Most of the printed matter hailing the advent of this revolutionary development in automotive vehicles refers to a *plastic* car rather than a glass car.

Every day new products are coming out in this category,—some are labeled fibrous glass, some are labeled plastics, some are labeled a combination. From a publicity point of view, this does not seem to be a very good idea because the net result of such diversity in presentation is bound to confuse rather than to clarify and to dissipate the public's interest in these products rather than to focus it with maximum sharpness.

There is something dramatic about glass being made into products that are stronger than steel, an idea which headline writers had not been slow to discover. When Governor Alfred E. Driscoll of New Jersey and his teen-age sons decided on an 800-mile trip along coastal waters this summer, the New York Times came through with a two-column headline reading, "Driscoll and two sons, in 14-foot glass boat, off on a cruise to Maine summer home."

On the other hand, Time magazine, covering the same cruise, refers to Governor Driscoll's boat as a "14-foot plastic runabout." Apparently it's six of one and half a dozen of the other.

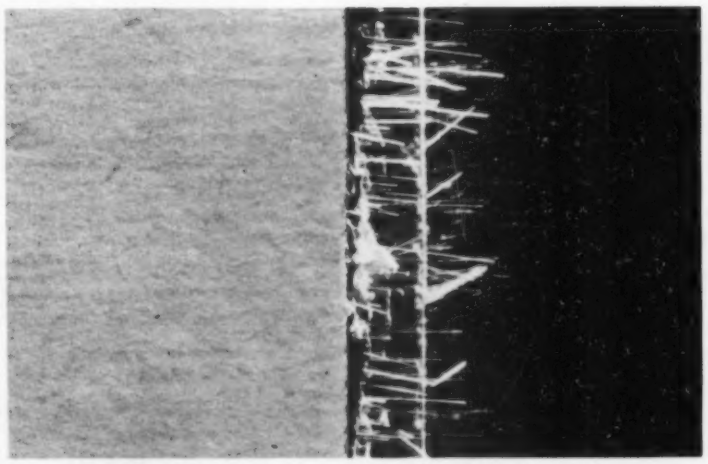
* * *

In view of the confusion prevailing in terminology among editors, writers and the general public, it is worth noting that the trade seems now to have agreed to use the term: *Fiberglas reinforced plastic* or *glass reinforced plastic* — or in this case, simply, for short: *Fiberglas plastic.*

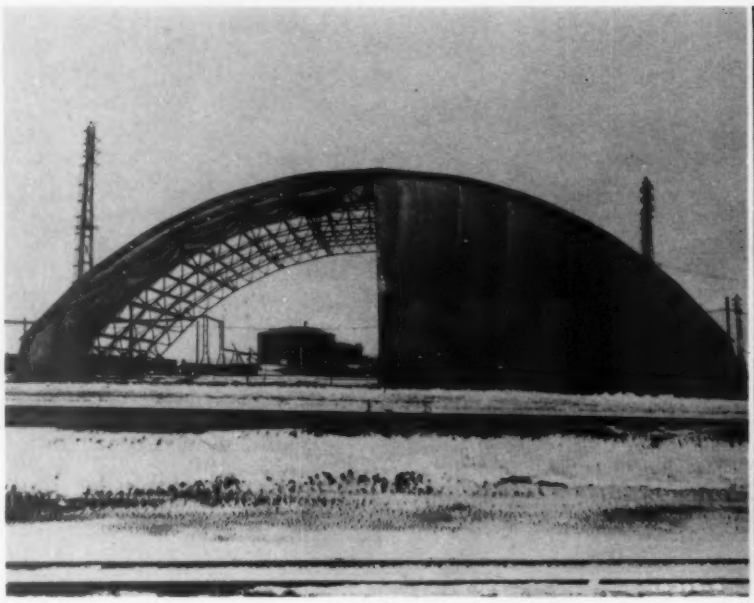
Industrial Reinforcements of Fiberglas

AMONG THE MANY important uses of Fiberglas that people don't know about unless they are in the business, special mention should be made of a fire-retarding wallboard made of Fiberglas rovings and strands mixed with Gypsum. This deserves special mention because it is the first single-layer construction Gypsum board to earn a one-hour Underwriters' fire rating. This is now the ideal type of fireboard for commercial installations.

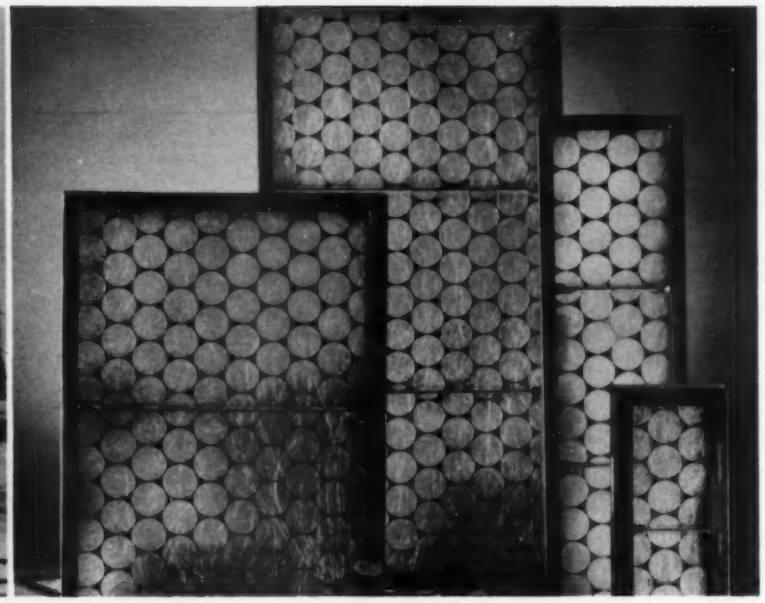
There is also an important new type of glass and Gypsum wallboard for residential constructions. Here glass is used instead of sawdust or cellulose fibers. Dispersed uniformly throughout the Gypsum core, Fiberglas strands give the new wallboard greater resistance to cracking and shattering. This wallboard is also easier to nail. Furthermore, thanks to the fact that Fiberglas makes a $\frac{1}{2}$" Gypsum board as good as a regular $\frac{5}{8}$" board, the saving in freight involved can be very important.



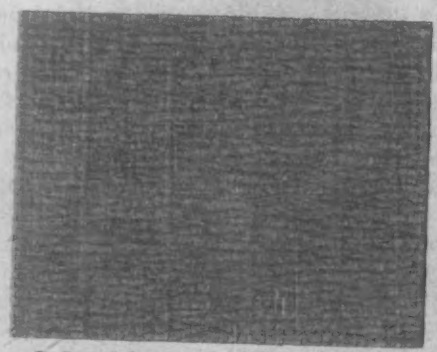
Wallboard reinforced with fiberglas chopped strands



Fiberglas . . . in air travel



. . . in air filters



Industrial paper reinforced with Fiberglas for shipping, concrete curing, and many other uses

Fiberglas Coverings and Packagings

ONE OF THE PROBLEMS in moving heavy machinery on open flat cars in freight trains is to find a covering that will furnish added protection at reasonable cost. Waterproof paper with Fiberglas reinforcement is one answer.

Here is how. Fiberglas non-woven scrim goes to a paper converter who laminates it between two sheets of kraft paper. The result is a tarpaulin to cover open freight cars or trucks and to wrap steel.

Corrugated box tapes and pressure-sensitive tapes are likewise given great strength by Fiberglas reinforcement.

. . . in sports equipment

. . . in automobiles

Fiberglas Air Filters and Aeration Pacts

DISPOSABLE AIR FILTERS constituted the first commercial use of fibrous glass way back in 1932, when Owens-Illinois first began experimenting with the production of fibers by steam drawing methods. These glass fibers are manufactured by the same basic process as insulating wool, but are greatly enlarged and coarse, much like broom straw. They are put up into pads and treated with adhesive to make air filters in warm air furnaces and air conditioning equipment for the purpose of straining dust, dirt and pollen from the air.

Today Fiberglas air filters are standard for air-purifying systems in homes, factories, stores, theatres, commercial buildings, and railroad passenger cars. It is the function of Fiberglas air filters to purify the air from pollens that cause hay fever, from abrasive dusts that menace the health of factory workers, from air-borne dirt that soils draperies and wall coverings and damages merchandise in retail stores.

Hay Fever Relief

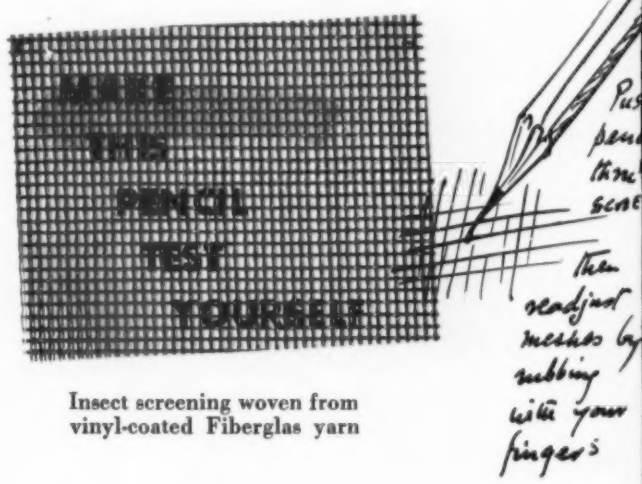
The effectiveness of Fiberglas air filters has been impressively demonstrated by the marked relief from hay fever reported by victims of this annoying affliction working in the buildings and vaults at the Oak Ridge, Tennessee, atomic bomb plant.

Another important industrial application of coarse fibers is in Fiberglas aeration pacts for the filtration of gases, liquids, and sludges. They are also used in evaporation, diffusion, and fractionation. There is an especially interesting process for filtering out inorganic salts from crude oils. If this were not done, refining equipment would corrode to uselessness in short order because of the action of the inorganic salts, particularly if the sulphur content is high. The development of this inexpensive process for removing salt content tends to reduce materially the price penalty on these oils.

ample, moisture-proof Fiberglas wadding to pack tablets, pills, or lozenges that must be kept dry; again, non-allergenic pillows and mattresses for people who are susceptible to feathers; also, Fiberglas interlining in winter coats for eczema sufferers who cannot stand wool.

Some of the minor uses can be of the most vital importance. A striking illustration is a special type of Fiberglas tape used to filter blood plasma. This was developed during World War II. To strain out undissolved particles of plasma, many kits employed to give transfusions to World War II wounded were equipped with a tiny filter of tightly woven Fiberglas tape inserted in the tubing leading from the plasma bottle. Because the inorganic glass fibers do not swell when wet, flow of life-giving plasma is not impeded. Nor is the tape weakened by moisture, because the individual fibers are non-absorbent.

There is a general conviction on the part of physicians and surgeons that Fiberglas is definitely scheduled to play an increasingly important role in the practice of medicine.



Insect screening woven from vinyl-coated Fiberglas yarn

Fiberglas Materials in Medicine

TO START WITH, the fact that glass will not absorb moisture, blood, or bodily secretions makes Fiberglas ideal for many bandages, dressings, and packs. This material is being increasingly used in cases of burns and skin grafting. Post-operative adhesions are likewise decreased. Because of the physical characteristics of cloth woven of Fiberglas yarns, irritation and adherence are eliminated by the use of the glass cloth packs. This is a reference from one of many recent articles on the various contributions of Fiberglas to modern medicine.

These include such interesting applications as a specially prepared radiopaque Fiberglas thread sewn into a surgical sponge, so that the sponge can be detected by X-ray in case it is sewn up inside a patient. That sounds funny, but one of the articles in the Medical Journal tabulates more than three hundred cases in which a sponge was left in the abdominal cavity, in spite of all the operational safeguards set up to prevent this.

In dentistry, radiopaque Fiberglas yarn offers many advantages in filling root canals. The various stages of canal filling can be easily verified with X-ray. It takes only 18 inches of yarn to fill the average size canal. The yarn can be easily worked and 'has great tensile strength and high dimensional stability,' says the Dental Digest. 'It is non-toxic, non-irritating, chemically stable, and does not absorb water.'

The list of medical uses is constantly lengthening: for ex-

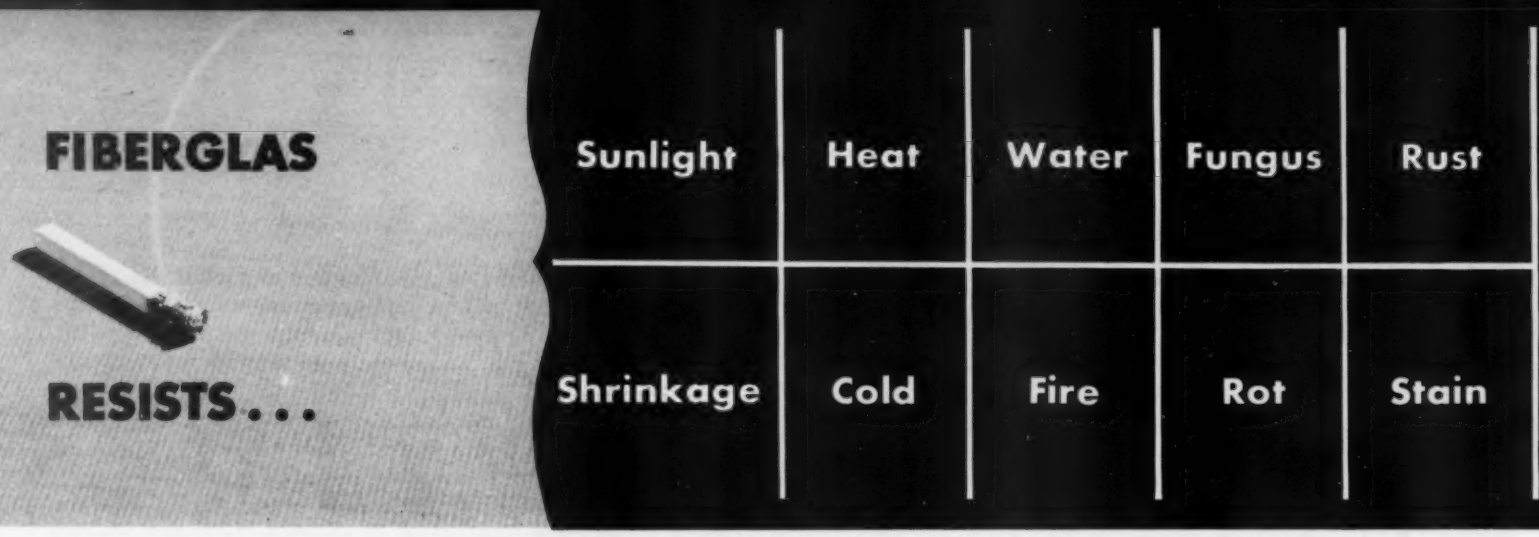
Coated Fiberglas, Yarns and Screens

THIS IS A VERY INTERESTING little chapter in the story of the development of Fiberglas for industrial uses. Vinyl-coated yarns are sold to weavers, who make them into screens. Since glass is the basic ingredient, these screens are inherently sun-proof, rot-proof, mildew-proof, and fire-proof. By the same token they are dimensionally stable and enormously strong.

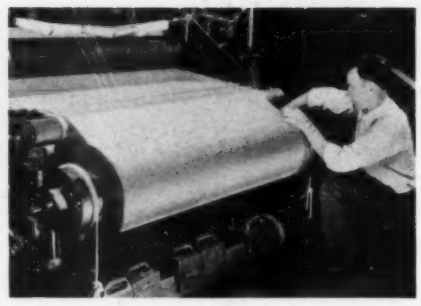
Translated into practical terms of daily usage, this means that they are also remarkably puncture-resistant. You can jab a Fiberglas screen hard with a pointed pencil without causing a puncture. What is even more important, you can then smooth and flatten the screen back into perfect shape. This is true even in cases of extreme distortion. Little Willie can shoot an arrow from the bow his parents gave him as a birthday present without causing more than a bulge in the screen, which mother can re-shape to normal by hand. This certainly ranks as one of the cute new industrial tricks that make life happier for harrassed home owners.

Here is a further interesting sidelight on Fiberglas screens. They may be sewn together where it is desirable to set up large screened areas, like gardens that require special protection from air-borne intruders.

Coated Fiberglas yarns, treated with nylon, Neoprene, and other special coatings, are sold to high-pressure rubber hose manufacturers, who braid the yarns into protective outer wraps.



Fiberglas is woven on standard loom equipment. Warping a loom which will be used to weave industrial service fabrics



The Future of Fiberglas...

How fast and how far will the use of Fiberglas products grow? Every indication points to continued growth, but beyond that it is impossible to make any predictions with safety.

* * *

One of the markets on which Fiberglas has its eye is that of automobile tires, in which rayon and nylon are now preeminent. Their great tensile strength and lack of stretch make Fiberglas fibers ideal, but their flex and abrasion characteristics are not suitable. When and if a Fiberglas yarn with all the right properties is developed, most other Fiberglas markets would be small by comparison.

* * *

How will the public react to the first automobile bodies of Fiberglas-reinforced plastic being produced this fall by Chevrolet and Kaiser? In a comparatively short time it may be known whether this application will or will not amount to appreciable volume.

Fiberglas fibers for furniture cushioning has just been introduced. Owens-Corning believes it has a good product and anticipates rapidly increasing demand. But the furniture trade and the public have not yet passed final judgment.

* * *

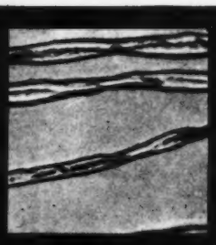
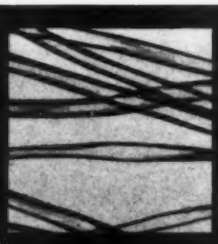
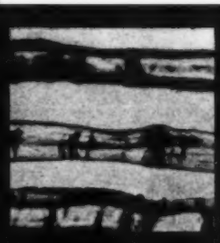
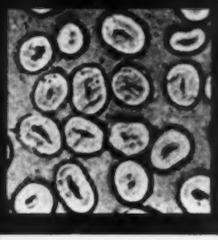
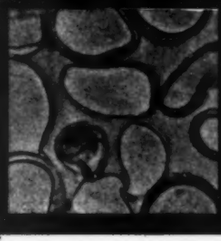
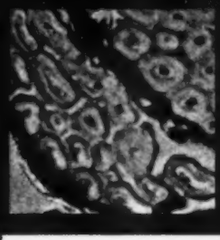
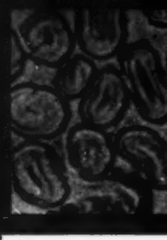
All-glass paper is a reality today, manufactured in small quantities on conventional paper-making machinery. As an industrial paper it offers qualities possessed by no other paper, but the extent of use of glass paper will depend on many factors, and it may take years to prove or disprove its significance.

* * *

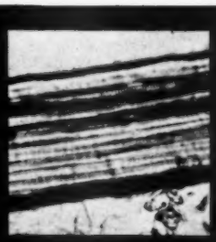
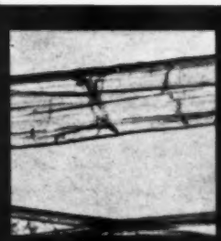
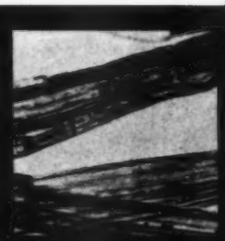
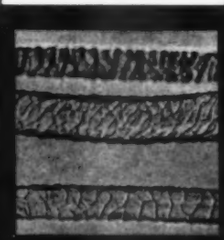
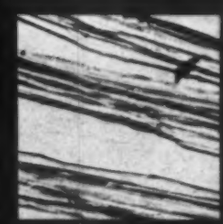
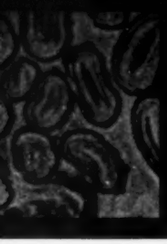
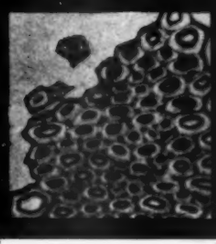
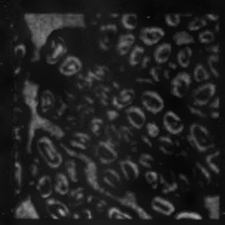
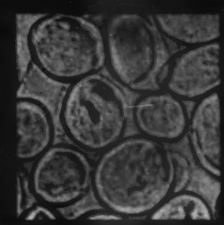
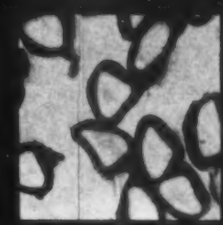
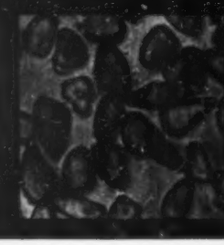
Other applications of Fiberglas products have not yet even reached the laboratory stage. Some once promising applications have come to naught. The only safe prediction is that there is a growing place in the American economy for fibers with Fiberglas characteristics.

END

AMERI

	TEST	VEGETABLE FIBERS				
		COTTON raw	COTTON mercerized	KAPOK	FLAX	HEMP
BURNING TESTS	Ignition	Ignite readily. Not self-extinguishing		Ignite readily. Not self-extinguishing	Ignites readily. Self-extinguishing	Ignite readily
	Description of Flame	Orange yellow. Mantle and bottom edges orange. Mauve tints at base not apparent with very well bleached samples		Orange yellow. Mantle and bottom edges orange with mauve tints	Orange yellow. Edges orange. Orange and yellow sparking	Orange yellow. M
	Smoke	Wisps of bluish smoke after flame extinguished			Bluish smoke on removal from flame	Wisps of bluish s
	Behavior of Material	Burn steadily. Leave delicate black or greyish ash skeleton. Little or no ash from very well bleached samples		Burn steadily leaving delicate black or greyish skeleton	Burns with crackle and smoulders on removal from flame Delicate greyish ash skeleton	Burn steadily lea
	Odor	Burnt paper			Burnt grass	
VISUAL TEST	Longitudinal Section					
	Cross Section					
CHEMICAL TESTS	Cuprammonium Hydroxide	Dissolves after initial swelling characterised by beaded effect due to contraction caused by torn cuticle	Dissolve rapidly	Do not dissolve	Dissolve	Dissolve
	Iodine, Glycerine & Sulphuric Acid	Blue		Yellow	Yellow and blue cross markings	Greenish blu to yellow. Blue cross markings
	Zinc Chloriodide	Reddish violet	Deep reddish violet	Yellow	Mainly yellow Some brownish violet	Violet
	Twist on Drying			Variable	Clockwise	C
	80% Sulphuric Acid — Cold					
	5% Sodium Hydroxide at Boil					
		COTTON raw	COTTON mercerized	KAPOK	FLAX	HEMP

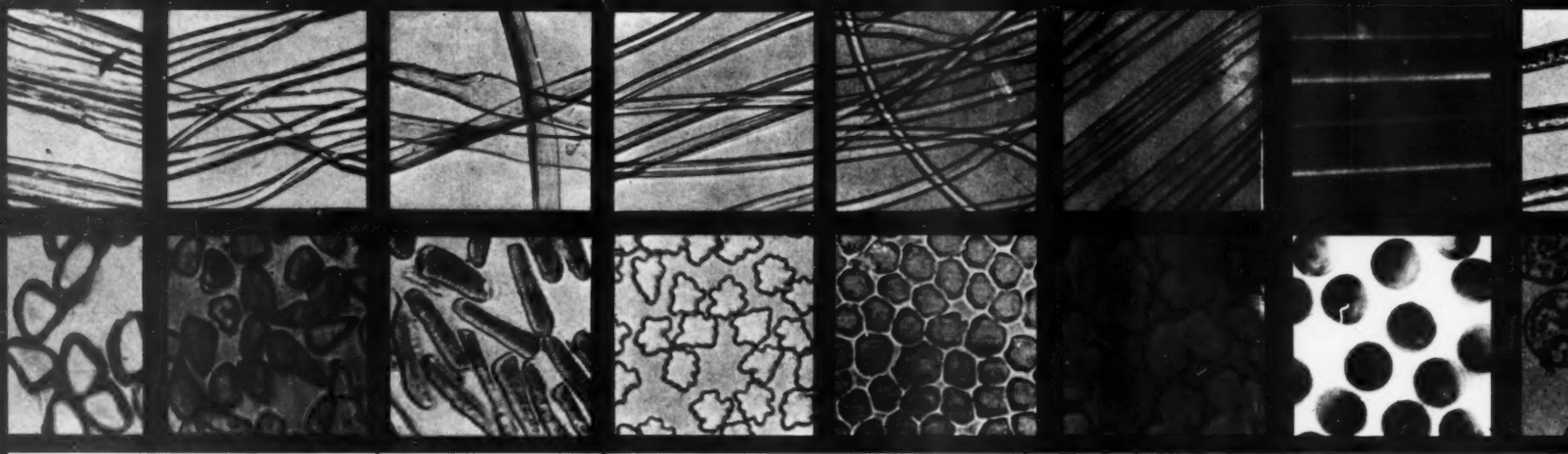
ERICAN FABRICS MAGAZINE ID

IBERS				ANIMAL FIBERS			
HEMP	SISAL	RAMIE	JUTE	WOOL	SILK raw	SILK degummed	
Ignite readily. Not self-extinguishing		Ignite very readily. Not self-extinguishing		Ignite readily. Self-extinguishing	Ignite readily. Self-extinguishing		
nge yellow. Mantle and bottom edges orange		Orange yellow. Mantle and bottom edges orange	Orange yellow. Mantle and bottom edges orange with mauve tints	Yellow. Orange mantle. Bottom edges bluish or purplish.	Orange yellow. Orange mantle. Sparking		
sps of bluish smoke after flame extinguished		Wisps of bluish smoke after flame extinguished		Bluish grey, rising in clouds on removal from flame.	Bluish grey on removal from flame		
n steadily leaving delicate white ash skeleton		Burns steadily and fairly quickly. Delicate black ash skeleton	Burns steadily. Delicate blackish skeleton smouldering to blue colour	Swell. Coarsest varieties burn with slight crackle. Leave irregular crisp black inflated mass.	Burn steadily with very slight sizzle		
Burnt paper		Burnt paper		Burnt hair	Burnt hair		
							
							
Dissolve	Do not dissolve	Dissolves	Does not dissolve	Stain blue. Slight lateral swelling. Do not dissolve	Dissolve rapidly lateral swelling and axial shrinkage		As with r
Greenish blue to yellow. Blue cross markings	Yellow Very faint cross markings	Blue cross markings	Yellow. Faint cross markings	Stain yellow	Stain yellow		
Violet	Dirty yellow	Brownish purple	Yellow				
Counter clockwise		Clockwise	Counter clockwise				
				Does not dissolve.	Dissolve rapidly lateral swelling and axial shrinkage		As with r
				Dissolves in 1 minute	Dissolve in 2 minutes		Di
HEMP	SISAL	RAMIE	JUTE	WOOL	SILK raw	SILK degummed	

AZINE IDENTIFICATION CHART

ANIMAL FIBERS

SILK raw	SILK degummed	SILK tussah	RAYON viscose	RAYON cuprammonium	ACETATE	VICARA	
Ignite readily. Self-extinguishing			Ignite readily. Not self-extinguishing			Ignites readily. Burns steadily Not self-extinguishing	Mode ignite flame.
Orange yellow. Orange mantle. Sparking			Orange yellow. Mantle orange. Occasional sparking		Yellow. Mauve or blue base	Yellow with orange tip.	Bl
Bluish grey on removal from flame			Wisps of blue smoke after flame extinguished			Puffs of grey smoke	
Burn steadily with very slight sizzle			Burns quickly. Slight sizzling. Fine grey or black ash		Melts and burns quickly. Leaves irregular charred bead	Forms charred, crumbly bead.	
Burnt hair			Burnt paper		Acetic	Burnt hair	



e rapidly lateral swelling and axial shrinkage		As with raw silk but slower reaction	Dissolve				
Stain yellow			Swells and stains purplish blue		Emits small bubbles. Outer portions and ends go into solution as yellow gelatinous mass. Eventually dissolves		
			Red to violet				
rapidly lateral swelling and axial shrinkage		As with raw silk but slower reaction		Dissolve		Does not dissolve	
Dissolve in 2 minutes		Dissolve slowly				Does not dissolve	

SILK raw	SILK degummed	SILK tussah	RAYON viscose	RAYON cuprammonium	ACETATE	VICARA	

RT OF TEXTILE FIBERS

MAN-MADE FIBERS

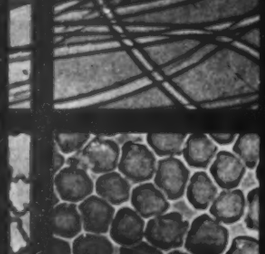
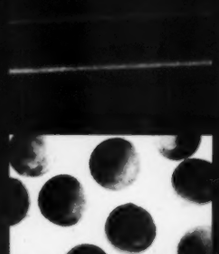
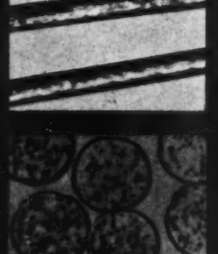
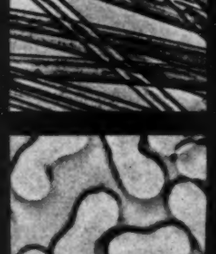
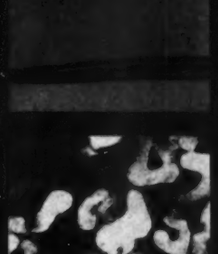
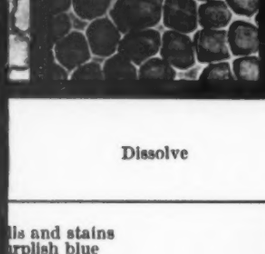
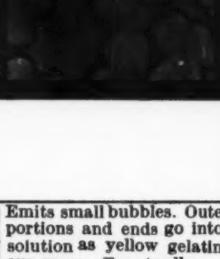
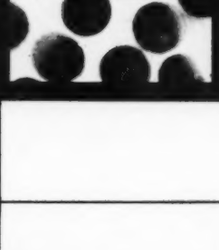
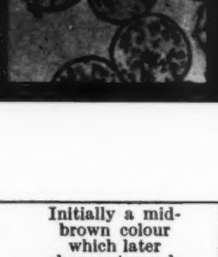
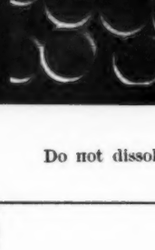
	NYLON	VINYON	DYNEL	SARAN	ORLON	ACRILAN	DACRON
ing	Moderately difficult to ignite. Shrinks from flame. Self-extinguishing	Difficult to ignite. Shrink from flame. Self-extinguishing, spurting and smoky.		Moderately difficult to ignite. Self-extinguishing	Ignites readily. Not self-extinguishing	Moderately difficult to ignite. Self-extinguishing	Difficult to ignite Self-extinguishing
tip.	Blue with bright yellow tip. Orange edges	Bright yellow. Orange tip. Green base		Bright yellow, orange tip. Bottom and edges green. Spurting. Yellow and green sparking	Yellow with orange tip.	Yellow.	Yellow with orange
	Puffs of bluish grey smoke on removal from flame	Thick blue-black with flame. Puffs of bluish grey smoke on removal from flame		Puffs of blue smoke on removal from flame	Black		
	Melts forming round fawnish bead. Drips and froths. Liquid ignites and burns with hissing	Soften and melt forming irregular bead. Burn leaving charred black bead.		Shrinks from flame. Softens and melts. Ignites. Leaves irregular crisp black bead	Forms irregular bead.	Tarry	Melts. Forms irregular be
	Fresh celery	Melting solder		Hyacinth	Aromatic	Burnt hair	Aromatic

	Do not dissolve						
	Initially a mid-brown colour which later changes towards more violet	Light yellow	Light brown				
	None						
	Dissolves	Do not dissolve		Dissolves with difficulty	Does not dissolve	Dissolves	Does not dissolve
				Do not dissolve		Dissolves	Does not dissolve
	NYLON	VINYON	DYNEL	SARAN	ORLON	ACRILAN	DACRON

Additional copies of this Chart for the office, showroom, classroom, or laboratory, and for the use of apparel manufactur be obtained from AMERICAN FABRICS *in the Empire State Building, New York 1, N. Y. Charts in tube container will be maile*

CATION CHART OF TEXTILE FIB

MAN-MADE FIBERS

	RAYON cuprammonium	ACETATE	VICARA	NYLON	VINYON	DYNEL	SARAN
	Ignite readily. Not self-extinguishing		Ignites readily. Burns steadily Not self-extinguishing	Moderately difficult to ignite. Shrinks from flame. Self-extinguishing	Difficult to ignite. Shrink from flame. Self-extinguishing, spurting and smoky.		Moderately difficult to ign Self-extinguishi
	range yellow, antle orange. Occasional sparking	Yellow. Mauve or blue base	Yellow with orange tip.	Blue with bright yellow tip. Orange edges	Bright yellow. Orange tip. Green base		Bright yellow orange tip. Bottom and ed green. Spurting. Yellow and gre sparking
	Wisps of blue smoke after flame extinguished		Puffs of grey smoke	Puffs of bluish grey smoke on removal from flame	Thick blue-black with flame. Puffs of bluish grey smoke on removal from flame		Puffs of blue smoke on removal from flame
	rns quickly. ght sizzling. ne grey or black ash	Melts and burns quickly. Leaves irregular charred bead	Forms charred, crumbly bead.	Melts forming round fawnish bead. Drips and froths. Liquid ignites and burns with hissing	Soften and melt forming irregular bead. Burn leaving charred black bead.		Shrinks from flame. Softens and melts. Ignite Leaves irregula crisp black bea
	urnt paper	Acetic	Burnt hair	Fresh celery	Melting solder		Hyacinth
							
							
	Dissolve						Do not dissol
	lls and stains rplish blue	Emits small bubbles. Outer portions and ends go into solution as yellow gelatinous mass. Eventually dissolves		Initially a mid-brown colour which later changes towards more violet	Light yellow	Light brown	
	ed to violet						
	None						
	Dissolve		Does not dissolve	Dissolves	Do not dissolve		Dissolves with diff
			Does not dissolve				
	RAYON cuprammonium	ACETATE	VICARA	NYLON	VINYON	DYNEL	SARAN

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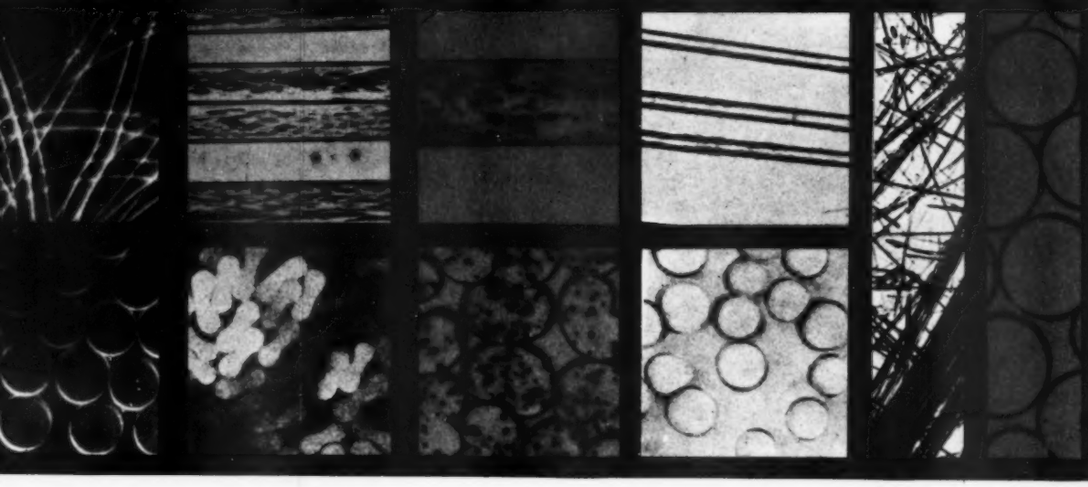
FIBERS

				MINERAL FIBERS		
SARAN	ORLON	ACRILAN	DACRON	ASBESTOS	GLASS	
Moderately difficult to ignite. Self-extinguishing	Ignites readily. Not self-extinguishing	Moderately difficult to ignite. Self-extinguishing	Difficult to ignite. Self-extinguishing.	Do not burn		Ignition
Bright yellow, orange tip. Bottom and edges green. Spurting. Yellow and green sparking	Yellow with orange tip.	Yellow.	Yellow with orange tip.	No flame	Orange	Description of Flame
Puffs of blue smoke on removal from flame	Black			None		Smoke
Shrinks from flame. Softens and melts. Ignites. Leaves irregular crisp black bead	Forms irregular bead.	Tarry	Melts. Forms irregular bead.	Does not melt. Glows red. Returns to original form on removal from flame	Softens forming round bead. Glows red, then orange. Leaves hard white bead	Behavior of Material
Hyacinth	Aromatic	Burnt hair	Aromatic	None		Odor

BURNING TESTS



Longitudinal Section

Cross Section

VISUAL TEST

Do not dissolve						Cuprammonium Hydroxide
						Iodine, Glycerine & Sulphuric Acid
						Zinc Chloriodide
						Twist on Drying
lves with difficulty	Does not dissolve	Dissolves	Does not dissolve			80% Sulphuric Acid — Cold
Do not dissolve		Dissolves	Does not dissolve			5% Sodium Hydroxide at Boil
SARAN	ORLON	ACRILAN	DACRON	ASBESTOS	GLASS	

CHEMICAL TESTS

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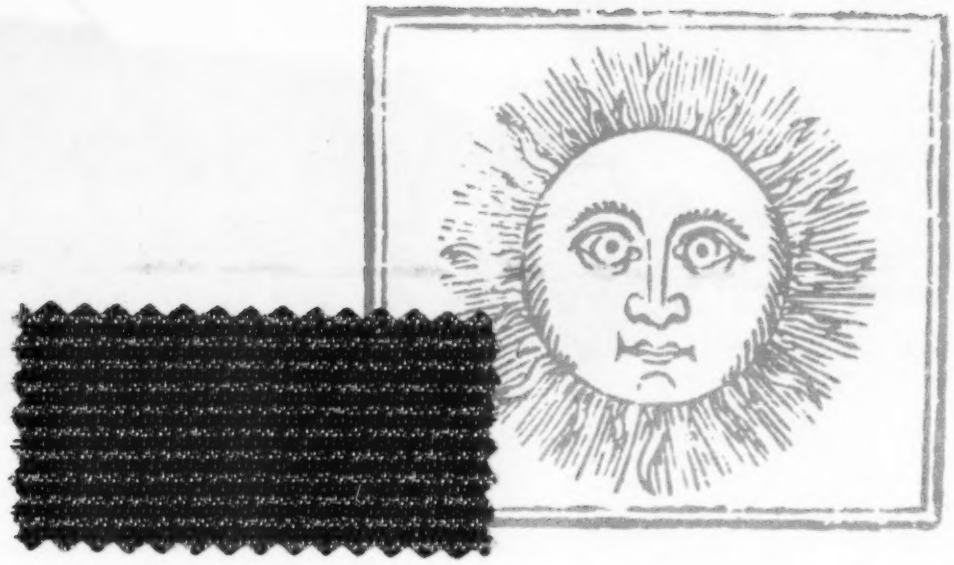


Permagold Metlon and Saran decorative
auto fabric by HAFNER

Auto Upholstery Fabrics Get A New Sparkle

CHANGES AND TRENDS in automobile interiors move forward many times more rapidly than those of domestic decoration, since the life of an automobile is proportionately shorter than that of a dwelling, and turnover correspondingly rapid. While the formation of a *period* in domestic interiors is a matter of decades, the automobile has already passed through several such since its birth, starting from the imitation of a horsedrawn coach — which still persists in the power-layout — and progressing through the chromium plated and streamlined eras of the inter-war years.

Today there is a trend towards gaiety and *livableness* in automobile decoration which could hardly have been forecast ten years ago. Then the interior was drab and there was indeed no way to brighten it up without light-toned fabrics which courted stains or bright colors which clashed with standard exterior finishes. Now it is being realized among manufacturers that cent for cent the interior decoration has as much sales value as any other item in the car's makeup, and that in a competitive market opening up today, a little glamour and a lot of style are essential.

* * *

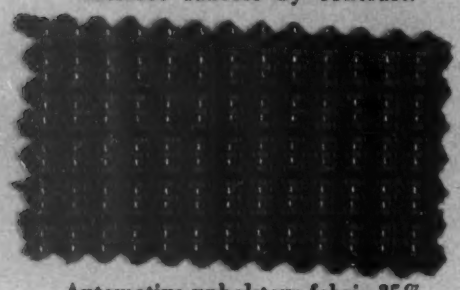
Recently G.M., Ford and Chrysler have shown models in which metallic yarns were used to key up the interior scheme and it was found that they harmonized organically with the chrome and paint of frame and instrument panel. They showed resistance to soiling and dust by remaining brilliant without tarnishing and they were evidently by no means unacceptable to the consumer.

As a result, mills interested in the Detroit market have concluded that a new trend has been established, and that fabrics with metallic yarns are today able to stand up to the rigid wear and tear, the non-fading and the good tailoring standards demanded. This has led to the creation of experimental fabrics which use metallic yarns to enhance smart appearance, to give an air of luxury and to be as spectacular as the limits of good taste will allow.

* * *

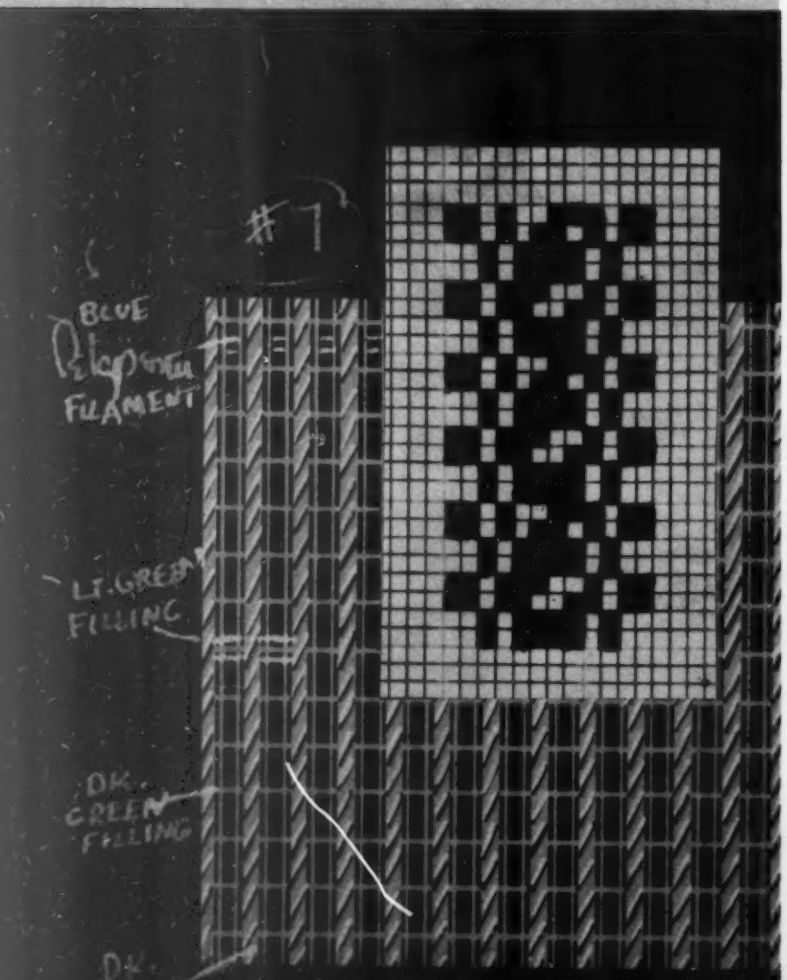
The challenge of this trend has been taken up by the metallic yarn manufacturers who have endeavored to increase the permanence of their product and by the weavers being prepared to go to the limit in seeking new and interesting combinations and weaves. For example, a newly designed fabric is shown on this page, in which Metlon contributes a new and more permanent gold yarn which reaches higher Fadeometer standards than any before achieved. The metallic yarn has been loomed with Saran yarns to give an outstanding iridescent brilliance which has, back of it, stain resistance, abrasion resistance, *slidability*, tailoring quality and other *musts* of the industry.

Auto body color chip for brown scheme is chosen to enrich interior fabrics by contrast.



Automotive upholstery fabric 35% nylon, 65% rayon stock dyed warp, Celaperm filling, in brown scheme.
By CHATHAM FABRICS

Auto bolster cloth in 17% nylon, 83% wool is piece dyed to tint matching upholstery and blending with body.
By CHATHAM FABRICS



The original design sketch for upholstery cloth has on it the designer's marginal color notes. Inset: The graph indication of weave to be used.

Interior Styling for 1955

The editors of AMERICAN FABRICS *invited one of the largest manufacturers of automotive fabrics to describe the designer's approach to the creation and styling of a typical automotive upholstery fabric. Martin Coffyn, who is Director of Styling at Chatham Manufacturing Company, responded by designing and manufacturing a fabric especially for* AMERICAN FABRICS.

Objective: To engineer a specific upholstery fabric for the 1955 line of cars of Company *X*. In discussion with the Styling Section of Company *X*, it was agreed that the project would be for the new hard-top model. Desirable features were to be: (1) a new, *crisp* look, (2) rich appearance, (3) preferably a small, all-over pattern, (4) to achieve a new and different color-blend by use of light and dark shades, (5) to be a medium-priced cloth.

Design: The first consideration was the general overall appearance of the car. It was decided to have light exterior body colors, with the upholstery fabrics in darker, richer colors blended with light and bright shades. Two body color projects were selected; (1) a soft, clear gray-green, and (2) an equal shade of warm beige. After a number of patterns had been sketched in watercolor, it was decided to proceed with Design #7 with the feeling that this small, overall design would provide the desired appearance and allow us to plan the blend of light and dark. Thus the pattern was *designed in color*.

Graph: The decision was made to make this particular cloth on the woolen system to achieve the character desired and to effect a saving of 12¢ to 15¢ a yard over the worsted system; to have a fiber content of about one-third nylon for strength and wear, about one-half rayon, and that the decoration in the filling would be Celaperm (dope-dyed acetate). The proposed pattern was then plotted on graph paper to effect the desired weave. The yarns were to be stock-dyed to provide the color-blend we wanted in the finished cloth. The warp yarns were to be a combination of 35% nylon and 65% rayon; the spun

HOW A DESIGNER CREATES AN AUTOMOTIVE UPHOLSTERY FABRIC

filling yarns the same, and the filament filling yarns, Celaperm.

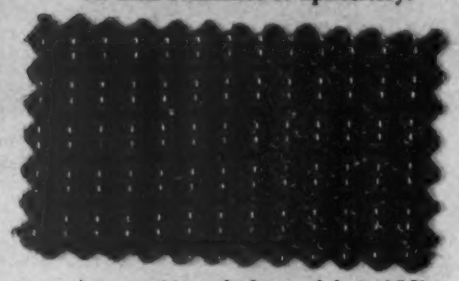
Weaving of Body Cloth: The design was then set up on the loom in the form of a *blanket,* plotted with three different sets of warp yarns in predominating colors of blue, green, and brown, since it was hoped to achieve the desired color-blend in the *bastard* weaves, rather than the straight warps. The material was then woven and finished, and finally rubberized on the back to prevent raveling during cutting and processing.

Bolster Cloth: After the body cloth had been successfully woven, the bolster cloth was planned as a solid color to be in the darkest shade of the body cloth. Since what was wanted was a luxurious effect, this bolster cloth was planned in 83% wool with 17% nylon to add strength. This material was woven and then piece-dyed in the matching color required to complement the body cloth pattern. The weight was 21 oz. per yard.

Specification Results: The *boil out,* or average, fiber content of the body cloth resulted as 30% nylon — 55% rayon — 15% Celaperm. The material was made in 60″ width to meet the requirements of Company *X* — various companies use different widths ranging from 54″ to 64″. The body cloth weighed 22 ounces per yard before rubberizing. The cloth had 66 ends per inch and 51 picks per inch, a good balance for the most desirable character of this cloth. Abrasion tests showed a *good* rating, and Fade-Ometer tests revealed these colors to be very fast to light. Tensile strength tests showed 231 lbs. in the warp and 143 lbs. in the filling, results considerably higher than the standard of 175 lbs. warp and 100 lbs. filling.

Conclusion: At a conference with the Styling Section of Company *X*, we discussed the finished fabrics as to durability, slideability, color fastness, ease of cleaning, wrinkle resistance, ease of upholstering. The two color combinations shown were adopted, and Company *X* suggested the additional colors necessary to complete the color line.

Auto body color chip for green scheme is in soft tone setting off dark brilliance of upholstery.



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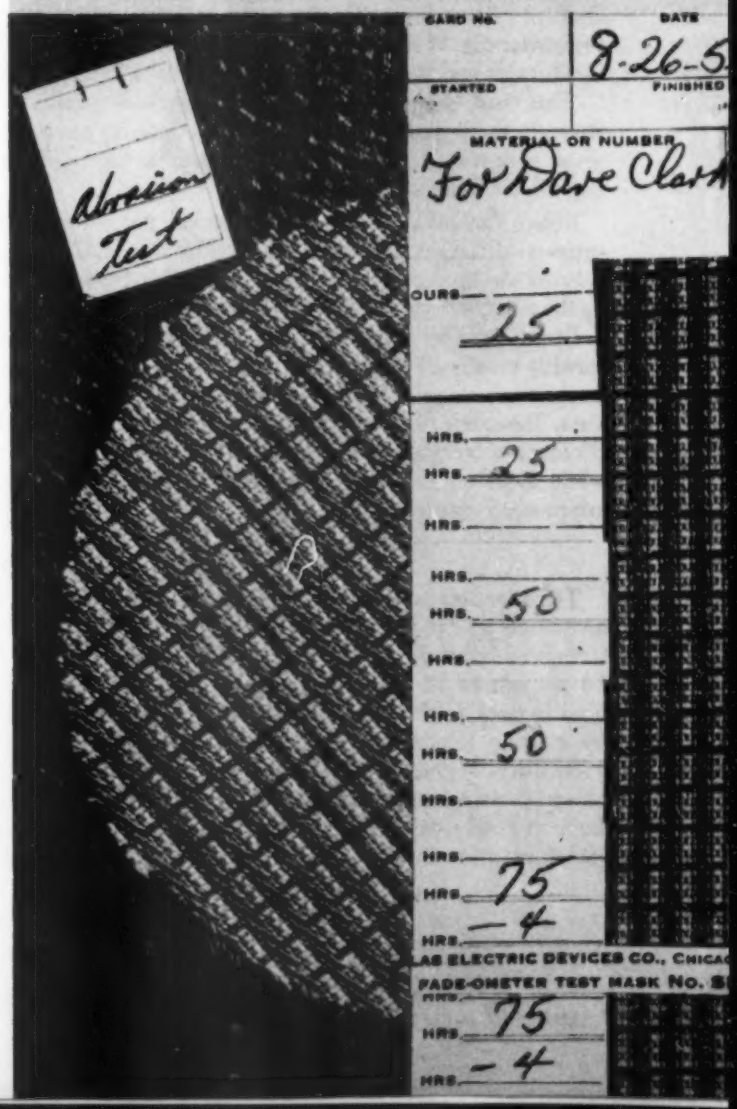
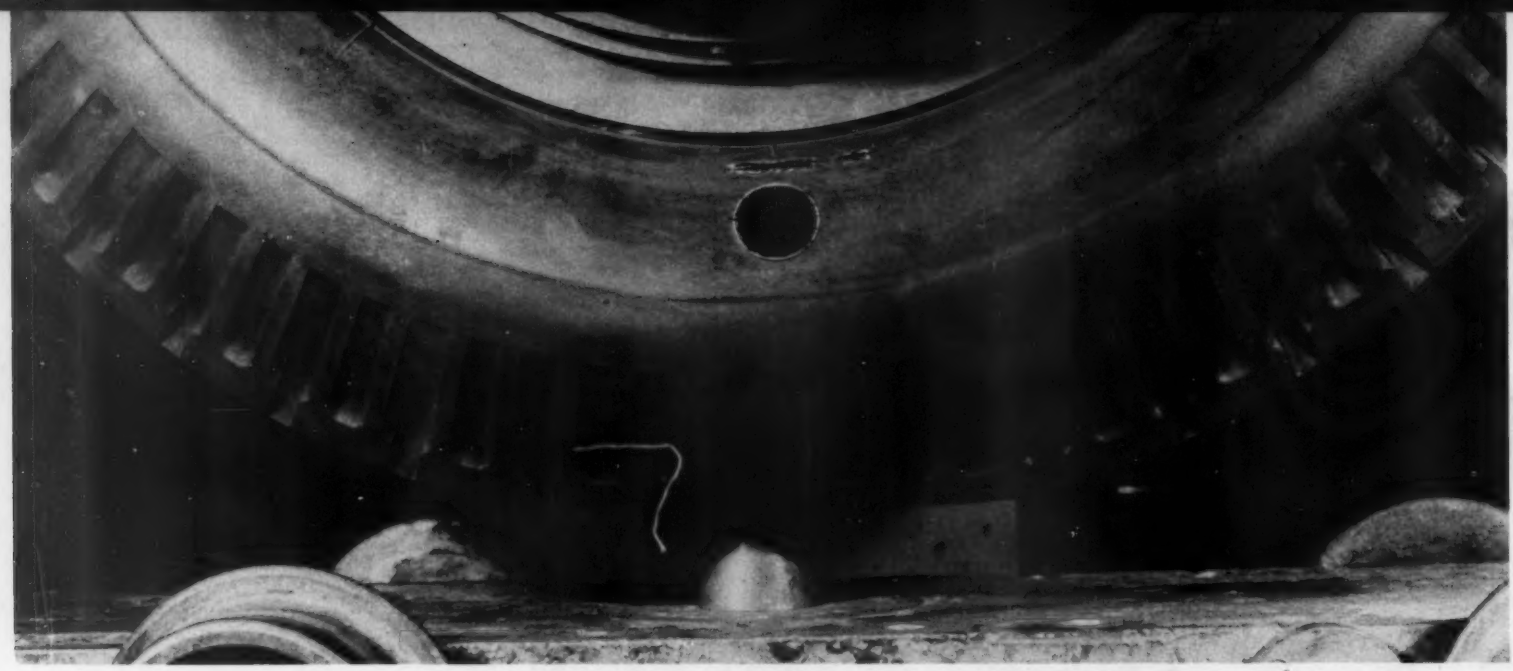
By CHATHAM FABRICS

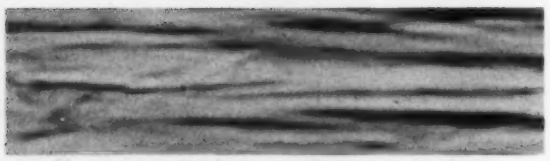


Abrasion and Fadeometer tests: at left, swatch stands up to twice the normal revolutions. Right: fading is negligible after 75 hours in standard test.



Testing DuPont's Super Cordura. The test, in which the tire is run countless times over a pointed steel spike, is designed to determine the resistance of tire cord to impact failure.

A New Fiber Development which Extends Life of Automobile Tires



Microphoto of a filament of rayon yarn shows breakup of filament into fibrils under tension

Microphoto of Super Cordura high tenacity rayon shows no breaking up into fibrils after crushing

THE FAMOUS high-tenacity rayon that did such yeoman service during World War II endowing synthetic rubber tires with vitally needed strength, and that has virtually replaced cotton for tire cord, may now yield to a new and super high-tenacity rayon. DuPont calls it *Super Cordura* and hails it as the greatest single improvement of high-tenacity rayon since the production of Cordura rayon tire yarn was initiated in 1935.

Tire cord twisted from Super Cordura is about 20 percent stronger than cord made of other high-tenacity rayon yarns and gives a greatly improved performance on the road under any and all conditions.

Super Cordura is still a 100 percent viscose yarn, but it is entirely different from all other yarns in this category not only in the molecular structure of the tiny filaments that make up the fiber, but also in the microscopic structure of the filaments.

From a practical point of view, the new Super Cordura yarn consists mostly of *skin*, which is the tough part of the yarn, with a minimum of *core*, which is the weak part of the yarn. Dr. K. C. Bass, Research Manager at DuPont's Spruance Rayon Plant in Richmond, Virginia, says that "many filaments have no core, while in others only a very small core portion is visible under microscopic examination."

Major Advantages

The advantages of this improved yarn for cord tires to a nation on wheels are indeed impressive. In the first place, there is a strength advantage of 17 percent to 30 percent conditioned, and 14 percent to 17 percent oven dry, over those cords currently used in tires. In the second place, Super Cordura is distinguished by a lower sensitivity to the effects of moisture. Compared to a swelling of 90 to 95 percent for conventional rayons, DuPont's new high-tenacity yarn swells only about 65 to 70 percent. These facts are reflected in greater resistance to tire failure through moisture, and easier drying in tire building operations.

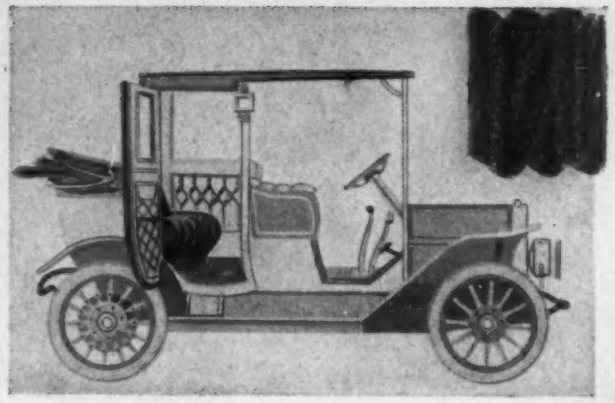
There is also a sharp reduction in fatigue failure. In fact the fatigue life of tires containing Super Cordura has been extended by more than twice that of comparable tires made with conventional high-tenacity yarns.

Super Cordura has come off with flying colors in so-called bruise tests, too, showing resistance to rupture that was several fold that of controlled tires. In very high speed tests, 80 to 100 miles per hour, the longevity of tires with cords of Super Cordura was several times that of controlled tires.

Thinner Tires

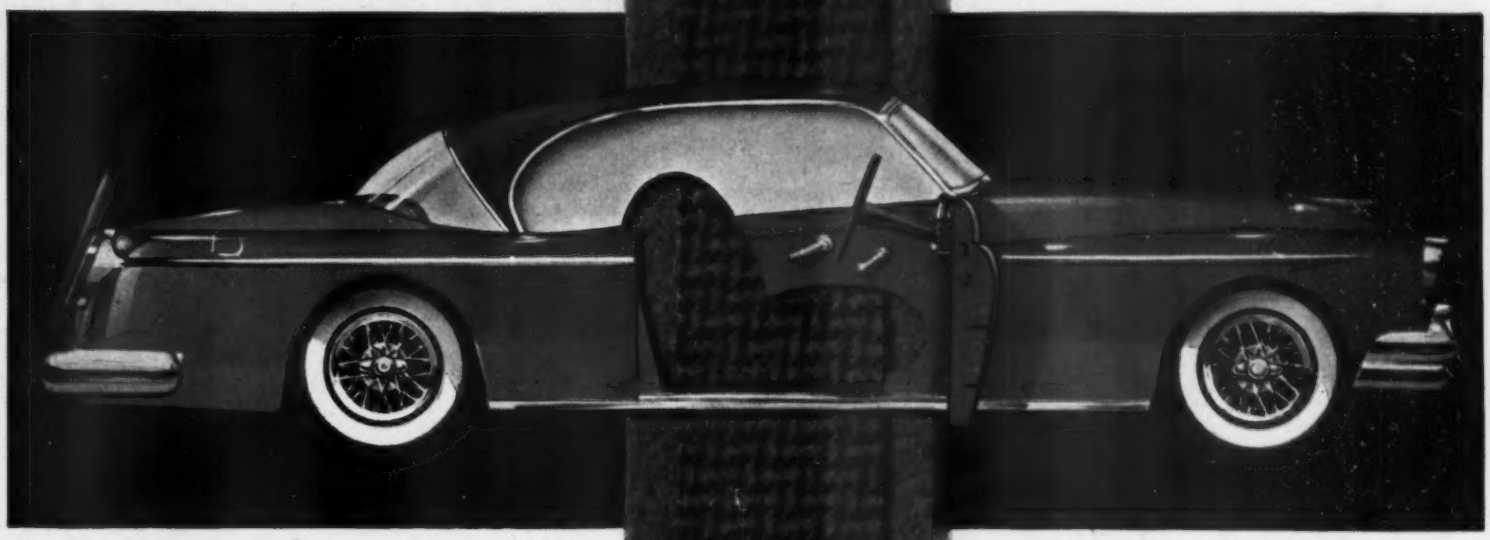
The thinner tires that can now be made show more than 100 percent improvement in tendency toward ply separation. More important still, there is a reduction in tire temperatures varying from 11 degrees to as high as 31 degrees Fahrenheit. This lowering of temperature alone is an important contribution to an improved tire performance. When you stop to think that there will be 44 million cars on the road at the end of this year, compared with less than 23 million at the end of World War II, and when you take into consideration the higher speeds of modern higher powered engines, you begin to appreciate the importance of this development. Tire failure at high speeds is not a pleasant thing to think about.

There is a $64 question tucked away in the glowing reports about the greatly improved performance of Super Cordura, especially in automobile tires. Won't this new yarn compete for the same markets with nylon, which the DuPont Company also sells to the rubber industry for tire cord? Dr. L. S. Sinness, Director of Sales for the Company's Textile Fibers Department, has a good answer for that: "If new, better products can be developed, they are sure to prosper at the expense of the older products. My company feels it is better to compete with ourselves than to be put out of business by somebody else."



Remember when upholstery looked as dull as this?

Today, a beautiful car is a colorful car. The hard-top model pictured here is an example of how the automotive industry recognizes changing taste. Every feature—from the upholstery and carpeting to every metal part the eye can see—has been planned to blend with the two-tone body for color harmony *inside and out.*



Horsepower of another COLOR

A basic business premise with Chatham is to match every change in its customers' product with an improvement of its own. When color became an important selling feature of fine cars, Chatham upholstery immediately reflected the swing to color. This awareness of the customers' market existed long before Chatham became a great mill. It began with the founder when he established his small family enterprise 75 years ago, and is still going strong today as a matter of family pride with the fourth generation of Chatham sons. *And family pride is a very good guarantee of quality.*

This Chatham upholstery fabric and bolster fabric were especially designed to match the colors of the car illustrated above. They're only one of Chatham's many smart new patterns in nylon, wool and nylon mixtures, worsted, and woolen broadcloths—fabrics which leading automotive manufacturers prefer for their sturdiness and colorful style.

CHATHAM upholstery

Chatham Manufacturing Company, Elkin, North Carolina · Automotive Fabrics Representative: Getsinger-Fox Company, Detroit

America's smartest designers are taking fashion fabrics

out of the shadows

with

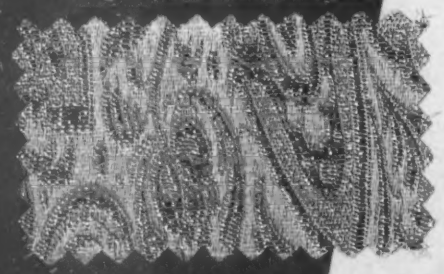
METLON®

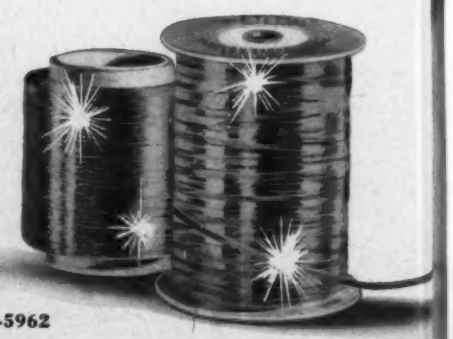
the non-tarnishing metallic yarn

Fabulous Metlon is making just THAT difference . . . turning the usual into the unusual . . . turning common place fabrics into fabrics with glamour, sparkle, imagination.

Metlon has been "engineered" to combine with virtually every other type of yarn or fiber . . . in exactly the effects desired by the fabric creator. Let *Metlon's* textile technicians show you the newest and most effective ways of using these miracle metallics to carry out your own ideas.

Metlon woven into a paisley design by Kandelaft Silks, Inc.





METLON CORPORATION,
432 FOURTH AVENUE, NEW YORK 16, N. Y. • PHONE: MUrray Hill 3-5962
A Division of Acme Backing Corporation

letters to the editor

HOME TESTING OF FABRICS

To the Editors:

It has occurred to me that perhaps some of the manufacturers who advertise in your publication maintain a list of people who are interested in experimental determination of the wearing qualities of their fabrics.

I have heard of such actual tests being carried out in the home with household appliances. I have often wondered whether such a plan was followed where the fabric is sent to an individual who will agree to record all wearing characteristics.

If you know of such companies I would appreciate knowing how to contact them.

Fern V. Bloom
Technical Librarian
B. F. Goodrich Co.
Brecksville, Ohio

New developments and uses of fabrics in industrial fields are covered in every issue of AMERICAN FABRICS.

INDUSTRIAL UNIFORMS AND EMBLEMS

To the Editors:

We should like to commend your firm most highly for the excellent story of the American Industrial Uniform in your summer 1953 issue of AMERICAN FABRICS. We have read it with much interest and agree that it is an excellent presentation of the subject.

Our company belongs to the group that makes uniforms according to specifications for large national firms. The writer got into this business in 1925 as Manager of Riverside Manufacturing Company at Moultrie, Georgia. At that time, this firm made overalls, children's play suits and various items, on all of which they were losing money. The only profit was from some coveralls and long service coats sold to the automotive industry through the automotive jobber. We conceived the idea of building up that phase of the business and it was pioneered in cooperation with the automotive industry.

The Pontiac Motor Division of General Motors was the first automobile manufacturer to announce a comprehensive uniform program for their dealers which has lasted to this day. With Pontiac we started to work on this program in 1928.

In 1929, after two or three years' testing, the Coca-Cola Company adopted a national uniform program which has lasted until this date and which is probably the largest industrial uniform program anywhere in the world.

On pages 112 and 113 you have made six excellent selections of material samples. All of the fabrics that we use come from Wellington Sears, Reeves, Galey & Lord, Simpson and Stevens. They are the leaders in the industrial uniform field.

Incidentally, the manufacturing of emblems for industrial uniforms is a very large business in itself and you could write a most interesting story about it. Some of the work that the emblem manufacturers do is unbelievable. Some companies spend a lot on fancy emblems.

Having been in this field since shortly before even the pioneering days started, we are most familiar with the history of industrial uniforms as well as the great progress that has been made. While we do not buy now from the firm, we should like to say that McCampbell and Company, whose Graniteville Super Twill you show, was one of the very earliest in the pioneering days of high grade industrial uniform fabrics. The writer still has and treasures a copy of the 1935 Bridge Laws which was bound in leather with his name imprinted in gold and autographed by Leavelle McCampbell who was a member of the committee that made the laws. He was a great textile man and bridge player.

L. D. Watson
The Watson-Scott Company
Thomasville, Georgia

To increase volume and maintain profits, each issue of AMERICAN FABRICS *brings you valuable, authentic, and needed information.*

A. F. IN SCHOOL USE

To the Editors:

Issue No. 26 came today. You know every new issue which arrives always leaves me a little breathless —with the scope and the detail and the beautiful press work. I've wondered several times if I was maybe not so discerning as most people, but lately I've had the magazines out where others can learn from them. And on many occasions different ones have touched the *pictured* swatch and taken the real swatch for the picture . . . and then exclaimed with a sheepish grin that the picture was so *real!* It was especially interesting to see this repeated many times in your Industrial Issue where the swatches were not creased. I thought you might like to know. I've seen only one other magazine which comes anywhere close to the lovely work you do and it is a European magazine.

About this new one — I've been doing quite a little work to revise our textile information—and needing all manner of help—especially for these new fibers. And lo and behold! in this issue, just like an answer to a prayer, is your chart for tests on most of the new ones. So I can see it pays to live right and subscribe to AMERICAN FABRICS. Incidentally, this is by no means the only help you have afforded me in my search for material for my lessons. I've been wearing out the pages from the three first issues (I had Silk and Wool, Fibers Report, and Industrial Fabrics). My big problem is to figure out how to condense the material. You present it in such an interesting and exciting manner it is hard to leave any of it out.

Marjorie Porteous
Wolfe School of Costume Designing
Long Beach, California

NYLON HOSIERY

To the Editors:

I am the owner of a small New England shop and by chance came across your beautiful magazine at the home of a friend of mine who is a dress manufacturer. I wondered if you could help a trying situation.

I refer to the constant complaints of my customers who claim that their nylon stockings give them no wear. They tell me that years ago, before the War, they used to get ten times the wear out of their stockings. When I question them as to the care they give their stockings, they assure me that they follow all directions with absolute fidelity. They are forced to inasmuch as stockings cost more and more.

I have my own theory which I have carefully explained . . . that the reason for this mortality is that they are wearing finer and finer stockings and that they need to have a stocking wardrobe — some stockings for day wear and the finer deniers for dress wear. But a lone voice, a single man cannot do anything. It needs a technical explanation . . . it needs the powerful voice of a magazine like yours to spread the truth. Believe me, I have been told that the nylon people have made a conspiracy in order to get women to buy more and more stockings. I have never accepted this un-American idea.

Ed. Burrows
Manchester, N. H.

CLASSROOM HELP

To the Editors:

Enclosed is my order for copies of your marvelous Identification Chart of Textile Fibers. It is one of those out-of-this-world classroom helps for teachers.

Grace M. Strubel
Pasadena 10, California

DRAPERIES FOR HOUSING PROJECTS

To the Editors:

We are presently engaged in research of various fabrics and materials which would be satisfactory for use as draperies in several of our new housing projects. It is not our usual practice to provide draperies in our housing projects; however, in this case the draperies will replace window shades and be hung from traverse tracks, installed at the time of construction.

In addition to consideration of costs, which must be kept at the most practical minimum, we must consider several other important factors — durability, washability, degree to which the fabric permits privacy (opaqueness), permanence of color, etc. In most cases the large windows (some are 10 feet long) will have a southern exposure; therefore it will be necessary to have a fabric which will keep out the sun but not to the total exclusion of light.

Some of the synthetic fibers seem to answer many of the above mentioned factors; however, the costs, appear prohibitive.

We would be most appreciative if you could advise us, either directly or by referring us to the proper sources, on this problem.

Mrs. Doris J. Allebach
Philadelphia Housing Authority
15th and Chestnut Streets
Philadelphia 2, Pa.

Each issue of AMERICAN FABRICS *brings you knowledge and information based on authenticity.*

WANTED: COTTON BLANKETS

To the Editors:

I am one of the many people who derive a great deal of pleasure through the year from reading and studying AMERICAN FABRICS.

Part of my work here is the control of hospital bedding and clothing in our 1200-bed institution.

For several months I have been trying to find a good all-cotton blanket, as we feel that to be the best for our mentally ill patients.

I hope that I am not imposing upon your facilities and good nature when I ask you if you can assist me with this problem. We have received several samples, but they are cotton and rayon, and for our purposes are not suitable.

Any information that manufacturers can furnish would be very much appreciated.

Mrs. Richard Patton
Bangor State Hospital
Bangor, Maine

THE CONSUMER

The millman, the converter, the apparel manufacturer, the retailer, the retail clerk . . . all constantly use textile words and phrases as selling blandishment . . . all assuming that Mrs. Consumer knows what they're talking about. Sadly enough, a good deal of it is incomprehensible to her. And so writer Cora Carlyle gathers a

Q. Since felt will be popular during the fall and winter, I would like to know just how to clean and repair garments made of it. I say repair because felt seems to tear unlike any other fabric I have seen. Also, is it possible to wash felt skirts?

A. Felt fabric is neither woven nor knitted. It is pressed into shape with the help of steam, pressure and high heat. Thus, felt will not resist shrinkage, stretching or wear. Too much strain on one portion of the fabric will cause separation. Also, repeated rubbing from wear in one area, such as at the waist, will result in chafe marks.

Felt skirts and jackets, nevertheless, are so popular and attractive, that it is worth taking precautions in their case. For instance, avoid any tight portions, such as across the back of the skirt or at the knees, back of the jacket, at the elbows, etc. Tight areas cause fabric stretching, and eventually holes. These holes are actually tears that can be repaired only by drawing the edges together and pressing mending tape on the under side.

Felt garments cannot be washed. In fact, the National Institute of Dry Cleaning suggests that you send all garments of this fabric to your dry cleaner. This includes garments with felt appliqué trimmings, etc. For best results, take the measurements of your garment and attach them to the article; it will aid the dry cleaner in his work.

Q. I have a raincoat that very often gives off a fish-like odor that is unpleasant. This happens particularly on muggy, rainy days. Can you suggest the cause?

A. Usually raincoat fabric is made water-repellent and much of the work is done by the use of resin finishes. The heat of the body may cause the odor to become apparent after wearing the garment; after dry cleaning the odor may be present, as well. Manufacturers now know how to apply these finishes for water-repellency while eliminating the possibility of odor recurrence. Your coat should be returned to the store where it was bought to be sent back to the manufacturer.

Q. What is a double-needle seam which takes care of raw edges? Can I accomplish this on my sewing machine?

A. This cannot be done on your machine. It has to be done on a special, high-speed machine used by manufacturers of dresses and lingerie when they desire to secure a cut edge without turning it over and one that will not stretch in further manipulation of the garment.

Q. In laundering garments made of the new fibers, I have difficulty in many instances with *limpness* of the articles after washing. What can I do to restore firmness?

A. One authority suggests the use of ordinary household gelatin. A level tablespoonful is enough for a blouse. Soak gelatin in a cup of cold water for a few minutes, then dissolve it by stirring in a little boiling water. Add the dissolved gelatin to warm water, enough to cover the blouse. Squeeze gently until the gelatin is well distributed. Make sure not to twist or wring. Hang while dripping until dry.

Q. Is it safe to dry-clean garments at home?

A. It is not recommended unless you are unable to get in touch with a reputable cleaner. If it is necessary to dry-clean at home, make sure that you buy a non-flammable fluid; use gloves to protect your hands and work out of doors or in a well-ventilated room. Do not leave open or exposed any pans or other containers of cleaning fluid. Be sure to work quickly, planning your task ahead of time. Hang the garments out of doors until all odors of fluid have disappeared.

Q. I have a dress of rayon interspersed with a gold pattern which has never tarnished. Yet a gold lamé blouse that I bought in France shows signs of darkening and there is a metallic odor about it. What is the reason for this?

A. The French blouse was a true lamé type, and as far as we know this is no longer available to purchasers here. The metal alloy used looks like gold but is subject to tarnishing and odor. Here we have developed yarns made of metal foil which are encased with a flexible chemical casing. These yarns keep their color and are not subject to change from atmospheric attack; even after long wear there can be no odor detected.

Q. My husband owns a fine leather golf jacket that is light in weight. When I took it to the dry cleaner he told me that this was a difficult job. Can you tell me if this is a valid appraisal?

A. Dry cleaning of leathers does require a particular set of skills and judgments. First, the leather may lose some of its color, sheen or finish. Loss of color would necessitate re-dyeing after cleaning. Then, if the softness were affected, it would be necessary to re-treat the article to impart the soft hand. One word of advice: Do not allow a leather garment to become too soiled before cleaning since the greater the soiled area involved, the more difficult it is to remove the affected areas and restore the garment.

If you have leather trimmings on some of your garments, these should be watched constantly and cleaned as often as necessary. Frequent care of leather trim will make it easier for the dry cleaner when the whole garment is sent for cleaning.

Q. How can I recognize Alencon lace?

A. True Alencon is imported but there is much machine-made Alencon-type lace produced in this country. It may be a lace edging or made in bands as well as in allover effects. It has a floral motif on a net background with a heavier thread outlining the floral pattern. It is used for dresses and lingerie trimmings chiefly.

WANTS TO KNOW...

group of typical Mrs. Consumers before each issue goes to press . . . asks them what they'd like clarified in textile terms . . . and puts the questions to Dr. George Linton, Textile Editor. Here is the latest group, and the answers may provide illuminating information for the benefit of many readers.

Q. At a recent club meeting, the term *differential stain* was used by a member of the symposium. Please enlighten me on this point.

A. This is merely a chemical mixture used in textile laboratories to identify the fiber or fibers present in a fabric. It is especially useful in dealing with blends. The stain is applied to undyed fabric because if any color were present, the tell-tale staining would not record correctly. Thus, if a dyed fabric is to be tested, the dyes must be stripped or removed. Best results are obtained from working on grey goods from the loom or knitting frame. After applying the stain, different fibers turn different colors; for example, wool turns red; nylon, orange; rayon, blue; cotton, green.

Q. How can I remove spots on an expensive evening dress, caused by perfume? I am afraid to send the dress to a dry cleaner without trying first to remove the stain.

A. Perfume should never be applied to a garment, only to the skin. A good percentage of perfume is alcohol content and this as well as the other ingredients used are sure to affect the dye or finish of the fabric. The National Institute of Dry Cleaning suggests that spots of this sort should be handled by a truly reliable dry cleaner. Be sure to tell the cleaner what caused the spots. He may be able with his resources to restore the color and texture lost by the application.

Q. The patterns I buy for home sewing do not tell the differences between *napped* and *pile* materials. They merely mention so many yards for such fabrics. Why is it necessary to use more yardage? And why must the pattern be placed differently?

A. Napped fabric is one which has been woven and then brushed or gigged with a fine steel wire roller or brush in order to pull out or raise the straggly or protruding fibers in the cloth to form a surface-effect napped face. The nap may be thick or thin in effect. Flannel is a good example.

In pile fabric, the effect, fuzzy or otherwise, is woven into the goods and is a permanent part of the material. The pile may be cut or uncut in final effect. Corduroy is an example of a pile cloth where the filling yarn has been cut, after the goods have been taken from the loom. Velvet and velveteen are cut pile cloths, while terry cloth or toweling is an example of an uncut pile fabric.

Your question centers on the laying-out of the pattern. You do not need to lay the pattern pieces so that the nap or pile lies in the same direction in all cases, although there is no harm in doing this. If the nap or pile does not lie in one direction, up or down, there will be a two-tone effect. And nap should run in the goods from top to bottom in the warp, or vertical, direction. Some patterns, however, will direct that the pile run up and also down depending on the final effect desired. All told, it is advised that the pile or nap run down since there will not be the ruffled effect in the garment when it is worn. Ruffling effect will be more marked when the nap or pile runs upward. You need, naturally, a little more yardage of this type of goods as the pieces must all be placed on both the up and the down of the material.

Q. What is *mat jersey* that is mentioned frequently in the papers as a fabric much favored for winter use?

A. This knit jersey is one that has been napped by stroking the goods with wire or vegetable brushes, commonly called *teasels*. An upstanding type of nap results from the treatment, and the cloth is then run between two rollers which cause the fibers to lie so that a truly matted surface-effect results. The material becomes flat and dull. The surface, however, may not look like the original after cleaning since the flattened fibers may rise or become distorted. In addition, ordinary wear may change the fabric effect because of abrasion and usage.

Q. I would like to know if there must be a label on a fur-trimmed garment, telling just what fur is used?

A. According to the Fur Products Labeling Act, a fur-trimmed garment must be labeled telling the kind of fur, provided the cost of the fur to the manufacturer is over five dollars. If the cost is below this figure, it is not necessary to list the fur trimming as to type or content.

Q. Why is there such a considerable price differential in wool broadloom rugs?

A. The higher the price, the more likely it is that there is a greater amount of wool or worsted stock per yard in the rug. Of course, this will make for a thicker fabric, denser construction, better cushioning and longer wear. There is a host of other reasons that might be mentioned, but in the serviceability of a rug, the type and quality of the stock used is paramount. Ask your salesman or the rug buyer to give you detailed information about each rug that you may be interested in buying.

Q. I have heard that I can use my steam iron to freshen suede bags, hats, shoes, etc. Is this true?

A. Yes, it is true. The procedure is easy, and is the same as that used by professionals. Steam from a kettle can also be used. In any case, use ordinary care to prevent the steam from touching the leather. Tilt the iron to a stationary position as the steam emits. Pass the suede shoe, bag or hat back and forth briefly in front of the steam, enough to raise the nap but not to soak the leather. Lay the article aside to dry thoroughly, then brush lightly in one direction. If the article is dusty, be sure to brush well before steaming. It is difficult to steam a large article such as a suede coat. This should be sent to a professional who has the proper equipment. Also, light colored suede articles which are soiled can not be cleaned by this process. Black and dark colored suede, however, will look like new after steaming.

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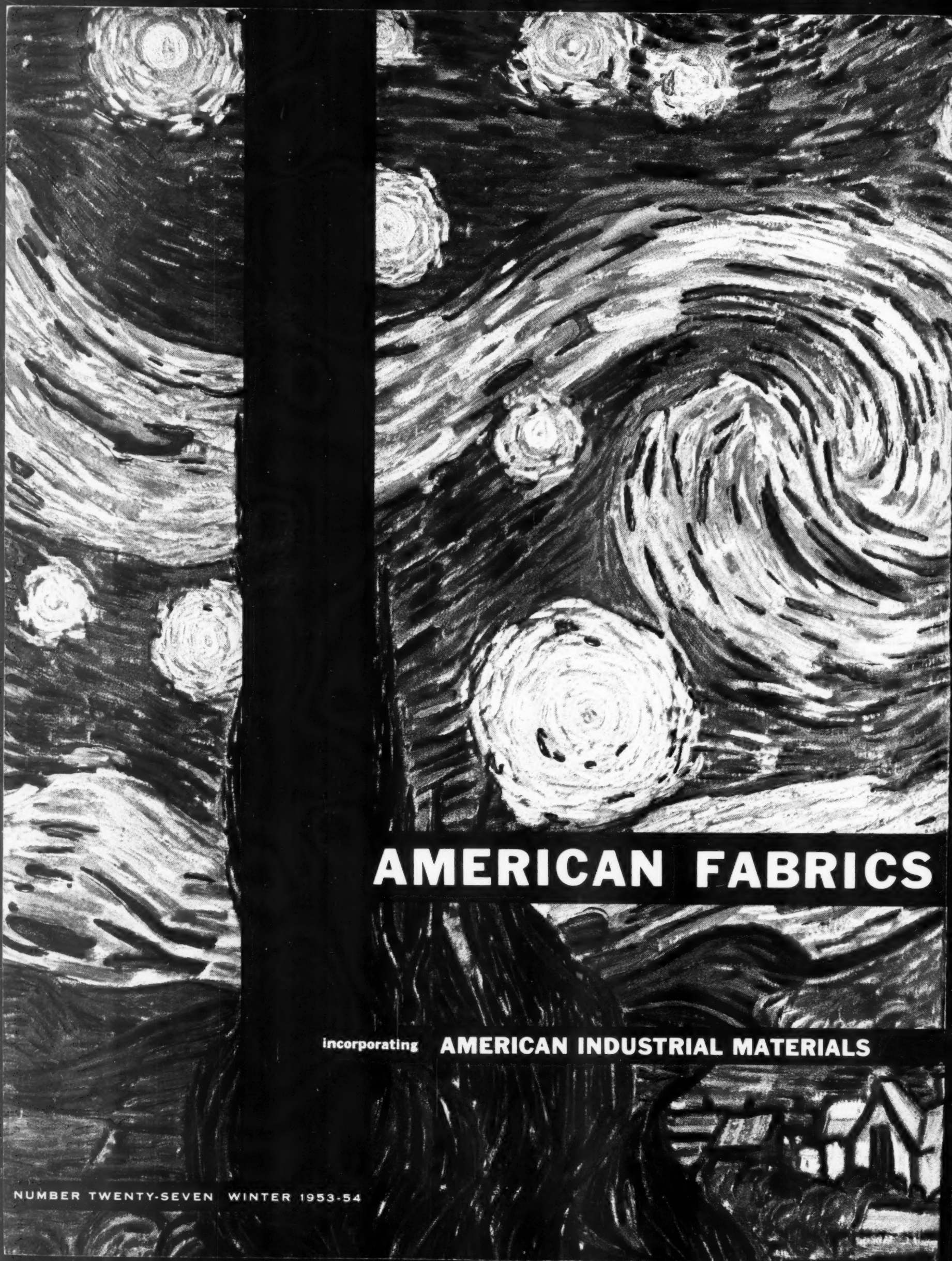

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